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MAINTENANCE AND SERVICE GUIDE
COMPAQ LTE 5000 FAMILY OF PERSONAL COMPUTERS

First Edition (September 1995)
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Documentation Part Number 213583-002
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Chapter 1. Product Description

1.1 Computer Features and Models

The Compaq LTE 5000 Family of Personal Computers introduces a new
generation of performance notebook computers with advanced modularity,
Pentium processors with 64-bit architecture, PCI local bus graphics, and
extensive multimedia support. This full- function family of notebook
computers allows desktop functionality and connectivity via an optional
expansion base.

Figure 1-1. Compaq LTE 5000 Personal Computer with Optional MultiBay-ISA
Expansion Base

1.1.1 Computer Features

The Compaq LTE 5000 Family of Personal Computers has the following
standard features:

o Extensive multimedia support with integrated 16-bit digital stereo audio
   (Microsoft Windows Sound System and SoundBlaster Pro compatible), dual
   speakers, microphone, full motion video support, optional CD-ROM drive,
   and optional MPEG and TV Video Adapter

o 75, 90, 100, 120, 133, or 150-MHz Intel Pentium processor with 64-bit
   architecture

o 8 or 16 MB of RAM, expandable to 72 or 80 MB

o 512 KB of 64-bit write-back, synchronous, level-2 cache memory available
  on the LTE5400 model; 256 KB of 64-bit write-back, synchronous,
  level-2 cache memory available on all other models

o Upgradable flash ROM BIOS

o High-performance 32-bit PCI local bus graphics with hardware-assisted
  Motion Video Acceleration (MVA)

o Color TFT VGA or SVGA, CSTN VGA or SVGA, or CTFT 1024 x 768 display
  panels

o Keyboard with built-in EasyPoint II pointing device and mouse buttons

o Removable hard drive

o MultiBay modular device bay that supports a CD-ROM drive, a second hard
  drive, a second battery pack, or diskette drive, and a full-length ISA
  slot that allows addition of an ISA expansion board (ISA slot available
  with MultiBay ISA Expansion Base only)

o Two Type III PC Card (PCMCIA) slot that supports one Type III, two Type
  I, or two Type II PC Cards, LAN connection or data/fax modem

o Infrared port for IrDA wireless data transfer, printing, and drive
  synchronization

o Ports and connectors for external equipment (see Section 1.3)

o Preinstalled software

o Security features

o Desktop functionality available with the optional Compaq LTE 5000
  MultiBay Expansion Base or MultiBay ISA Expansion Base.

1.1.2 Computer Models

The Compaq LTE 5000 Family of Personal Computers is available in the
models shown in Table 1-1.

Table 1-1. Compaq LTE 5000 Family of Personal Computers Models

Model	Processor	Display	Hard Drive	CD-ROM Drive
LTE 5000 Model 510 CSTN	Pentium/75	10.4-inch CSTN/VGA	510 MB	Optional
LTE 5000 Model 810 CSTN	Pentium/75	11.3-Inch CSTN/SVGA	810 MB	Optional
LTE 5000 Model 810 CTFT	Pentium/75	10.4-Inch CTFT/VGA	810 MB	Optional
LTE 5100 Model 810 CTFT	Pentium/90	10.4-Inch CTFT/SVGA	810 MB	Optional
LTE 5100 Model	Pentium/90	10.4-Inch	810 MB	Yes

```
810 CD CTFT                          CTFT/SVGA
-------------------------------------------------------------------------
LTE 5150 Model      Pentium/100      11.3-inch      810 MB         Yes
810 CSTN 800                         CTFT/SVGA
x 600
-------------------------------------------------------------------------
LTE 5200 Model      Pentium/120      10.4-inch      1.35 GB        Optional
1350 CTFT                            CTFT/SVGA
-------------------------------------------------------------------------
LTE 5250 Model      Pentium/120      10.4-inch      810 MB         Yes
810 CTFT                             CTFT/SVGA
800 x 600
-------------------------------------------------------------------------
LTE 5280 Model      Pentium/120      11.3-inch      810 MB         Yes
810 CTFT                             CTFT/SVGA
800 x 600
-------------------------------------------------------------------------
LTE 5280 Model      Pentium/120      11.3-inch      1.35 GB        Yes
1350 CTFT                            CTFT/SVGA
800 x 600
-------------------------------------------------------------------------
LTE 5300 Model      Pentium/133      12.1-inch      1.35 GB        Yes
1350 CTFT                            CTFT/SVGA
800 x 600
-------------------------------------------------------------------------
LTE 5300 Model      Pentium/133      12.1-inch      2.16 GB        Yes
2160 CTFT                            CTFT/SVGA
800 x 600
-------------------------------------------------------------------------
LTE 5380 Model      Pentium/133      12.1-inch      2.16 GB        Yes
2160 CTFT                            CTFT/10 X 7
1024 x 768
-------------------------------------------------------------------------
LTE 5400 Model      Pentium/150      12.1-inch      2.16 GB        Yes
2160 CTFT                            CTFT SVGA
800 x 600
=========================================================================
```

1.1.3 Preinstalled Software

The computer can have either Windows 3.1 or Windows 95 installed.

Windows 3.1 Software Components

The following software is preloaded if Windows 3.1 is installed:

o MS-DOS 6

o Microsoft Windows 3.1

o Cirrus GD-754x Video Driver

o TEAC CD-40E CD-ROM Driver and CD Audio Player for DOS

o ESS Audio Driver and Audio Clip Library

o Compaq Sound System Version 1.70

o Compaq Network Interface Drivers

o Compaq PCMCIA 3.14

o Logitech Mouse Ware 6.46

o PUMA TranXit Version 1.03

o Microsoft Video for Windows 1.10e (Runtime version)

o Machine Check Version 1.1 (MACHCHK.SYS)

o SystemSoft Suspend-To-Disk Utility 2.20.00 (0VMAKFIL.EXE)

o Compaq Supplementary Programs

o Microsoft Supplementary Programs

o SAFETY & COMFORT GUIDE

o COMPAQ DICTIONARY

o COMPAQ USER'S GUIDE

o ONLINE OPTIONS CATALOG

o Compaq Diagnostics for Windows 1.05

o CompuServe WinCIM (1.4/1.2/1.31D/1.31F)

o America Online for Windows (North America only)

Windows 95 Software Components

The following software is preloaded if Windows 95 is installed:

o Cirrus Logic GD-754x Video Driver

o TEAC CD-40E CD-ROM Driver

o Compaq PCMCIA 3.14 Installer for Windows 95

o Logitech Mouse Ware 6.50

o Machine Check Version 1.1 (MACHCHK.SYS)

o SystemSoft Suspend-To-Disk Utility 2.20.00 (0VMAKFIL.EXE)

o Microsoft Infrared Monitor and Direct Cable Connect

o SAFETY & COMFORT GUIDE

o COMPAQ DICTIONARY

o COMPAQ ONLINE USER'S GUIDE

o ONLINE OPTIONS CATALOG

1.1.4 Intelligent Manageability

Intelligent Manageability combines innovative hardware technology with PC

LAN management tools from Compaq and other leading vendors to make Compaq
portable computers easier to inventory, troubleshoot, and protect.

Asset Management

AssetControl is asset management software designed to cut the time and
cost of conducting a physical inventory of personal computers, key
components, and monitors. AssetControl is preinstalled on portable
computers, key components, and monitors that support the Video Electronics
Standards Association Data Display Channel (VESA DDC) and Extended Display
Identification Data (EDID) standards.

AssetControl features make it easy and inexpensive to maintain an
accurate, up-to-date inventory. Detailed inventory information, including
manufacturer, model, serial number, asset tag, and ROM revision level can
be viewed, printed, or saved electronically using Compaq Insight Personal
Edition or Compaq Insight Manager.

Compaq Insight Personal Edition refers to Intelligent Manageability
software that diagnoses portable computer hardware, monitors the internal
system temperature and IntelliSafe hard drive, and then displays a
prefailure warning message on detecting a system temperature or hard drive
fault.

Compaq Insight Manager refers to Information Manageability software that
helps manage servers and personal computers on a network. Compaq Insight
Manager features intelligent monitoring and alerting, remote maintenance,
and visual control of network resources.

Fault Management

Fault Management is a utility designed to help prevent the loss of
critical data. This feature is available only in the 2.16GB DFP (SMART
system compliant drives). Fault Management has the following features:

o SMART (IntelliSafe) hard drive - Constantly monitors hard drive activity
  to predict failures before they occur.

o Temperature sensing - Hardware and software that tracks the internal
  temperature of the computer and displays a warning message when the
  normal range is exceeded.

Compaq Insight Personal Edition displays a pop-up message to notify you
when a hard drive or system temperature fault is detected. If the computer
is connected to a network managed by Compaq Insight Manager, fault notices
are also sent to the network management application.

Security Management

The security management utility provides a set of security features to
protect the computer and data from unauthorized access.

o Passwords - Prevents unauthorized access to information stored on the
  computer or network.

o Drive security - Prevents starting the computer from the diskette drive
  and reading information from the diskette drive.

o Device disabling - Prevents unauthorized data transfer over fax/modems,
  serial ports, parallel ports, and infrared ports.

```
1.1.5 Security Features

The computer has the following security features:

o Ability to secure drives in the dedicated hard drive bay and computer
  MultiBay

o Ability to secure the computer and either MultiBay Expansion Base to an
  immovable object with an optional cable lock

o Ability to establish power-on and setup passwords and to disable ports
  and devices from the Security menu in Computer Setup

1.1.6 Power Management

Power Management offers three levels of power conservation:

o High: Provides the maximum amount of power conservation and the maximum
  battery operating time from a single charge.

o Medium: Provides a balance between performance and battery life (factory
  default).

o Custom: Conserves power according to user-specified timeout settings.

The conservation level sets the timeouts for Standby (Suspend),
Hibernation, drives, and screens. Use the Fn+F7 hotkeys to toggle off and
on the power management settings in Computer Setup and Windows Power
Properties.

Selecting to disable the infrared port under the Security menu also
conserves power.
```

Chapter 1.2 Computer Options

```
The options that are available from Compaq for the computer are described
in the following sections.


1.2.1 MultiBay Expansion Base and MultiBay ISA Expansion Base


The MultiBay Expansion Base and the MultiBay ISA Expansion Base provide
two additional MultiBay device bays, two PC Card Type III slots,
integrated Ethernet, integrated stereo speakers, and computer I/O port
replication. The expansion bases are described in Section 1.5. When the
computer is docked in an expansion base, the total system functionality
includes:


o Support for up to three MultiBay devices simultaneously

o Overall system support for up to four hard drives or two diskette drives

o Up to three CD-ROM drives installed as follows:

  - Three CD-ROM drives: The two in the expansion base must be used for
    data; the CD-ROM drive in the computer can then be used for audio or data.
```

- Two CD-ROM drives: You can have one in the expansion base and one in
     the computer; either drive can be data or audio. If both drives are in
     the expansion base, they must be for data only.

   - One CD-ROM drive: It can be either data or audio and in either the
     computer or expansion base.

o Two Type III PC Card slots

o Overall system support for up to four PC cards

o Charging of up to four battery packs

The MultiBay ISA Expansion Base provides the same functionality as the
MultiBay Expansion Base, with the following additional features:

o One ISA Expansion slot allows ability to add a full-length ISA expansion
  board

o Additional ventilation exhausts on both sides of the expansion base for
  increased ventilation

o High performance stereo speakers and new audio bass ports on both sides
  of the expansion base for "PremierSound" CD-quality audio

1.2.2 System Memory Options

The main memory subsystem supports a minimum standard 8 MB or 16 MB of
DRAM, expandable to a maximum of 72 or 80 MB. The minimum standard DRAM is
integrated on the processor board. The upgrade DRAM is accomplished with
memory expansion boards that are available in 8, 16, 32, and 64 MB
increments. The memory expansion boards require no special tools for
installation and can be installed by the inexperienced user. System memory
can be upgraded according to the schedule in Table 1-2:

Table 1-2. Memory Upgrade Schedule

Base Memory	Memory Expansion Board	Total Memory
8/16 MB	None	8/16 MB
8/16 MB	8 MB	16/24 MB
8/16 MB	16 MB	24/32 MB
8/16 MB	32 MB	40/48 MB
8/16 MB	64 MB	72/80 MB

1.2.3 Mass Storage Options

The following mass storage options are available for the computer:

o 3.5-inch 1.44 MB Diskette Drive

o 510 MB IDE Hard Drive

o 810 MB IDE Hard Drive

o 1.35 GB IDE Hard Drive

o 2.16 GB w/DFP IDE Hard Drive

o 2.16 GB IDE Hard Drive

Diskette Drive

The computer uses a 3.5-inch diskette drive that is enclosed in a module
that fits into the MultiBays of the computer or the MultiBay Expansion
Base and the MultiBay ISA Expansion Base. The diskette drive is a
three-mode type that is compatible with 1.44 MB, 1.2 MB and 720K AT drive
types. The system supports a maximum of two diskette drives: one in the
computer, one in the MultiBay Expansion Base. When using Windows 95, real
mode drivers must be used for a diskette drive in the expansion base. For
more information see "Solving Diskette and Diskette Drive Problems" in
Chapter 2.

Hard Drive

The computer supports an IDE hard drive in the dedicated hard drive bay.
Cable select technology is employed for device 0/device 1 (master/slave)
selection. The hard drive can be locked in place with the hard drive
security screw installed adjacent to the hard drive release on the bottom
of the computer. See Appendix C for information on using Compaq LTE Elite
hard dives in the computer.

1.2.4 CD-ROM Drive

The modular, 2x, 4x, and 6x CD-ROM drives are available from Compaq as a
standard model or an option for the computer or either expansion base. The
CD-ROM drive is compatible with industry-standard CD-ROM disc media and
formats. It can read:

o CD-Digital Audio

o CD-ROM Mode 1 and Mode 2

o CD-ROM/XA Mode 2 (Form 1 and Form 2)

o CD-I Mode 2 (Form 1 and Form 2)

o Video CD

o Photo CD (single and multisession)

o ISO 9660 and High Sierra

1.2.5 MPEG and TV Video Adapter

The MPEG and TV Video Adapter option is supported with the computer and both expansion bases. This option provides an MPEG decoder for high quality digital video playback with Windows scaling and interleaved stereo audio, S-Video I/O for laser disc quality playback video, and composite video supporting the NTSC/PAL formats.

1.2.6 Miscellaneous Options

The following options for the computer are also available from Compaq:

o AC Adapter

o Automobile Adapter

o NiMH Battery Pack

o Battery Fastcharger

o Enhanced III External Keyboard

o Compaq Mouse

o Carrying Case

o MultiBay Device Carrying Case

o MultiBay Hard Drive Adapter

AC Adapter

The AC Adapter supplies DC voltage to the system DC-to-DC converter for use by the system to operate and/or charge the installed battery pack(s). The adapter provides sufficient power to charge each main battery pack in 1.5 hours or less with the system off. The adapter also powers the Battery Fastcharger.

Automobile Adapter

The Automobile Adapter is used to charge the computer from an automobile battery. It also powers the Battery Fastcharger.

External Battery Fastcharger

The external Battery Fastcharger is available from Compaq and has the following features:

o Two battery charge bays

o Fast charging of one battery in 1.5 hours

o Fast charging of two batteries in 3 hours

It requires the AC Adapter or Automobile Adapter for power.

Chapter 1.3 Computer External Components

The external components on the front and right sides of the computer are
shown in Figure 1-2 and are described in Table 1-3.
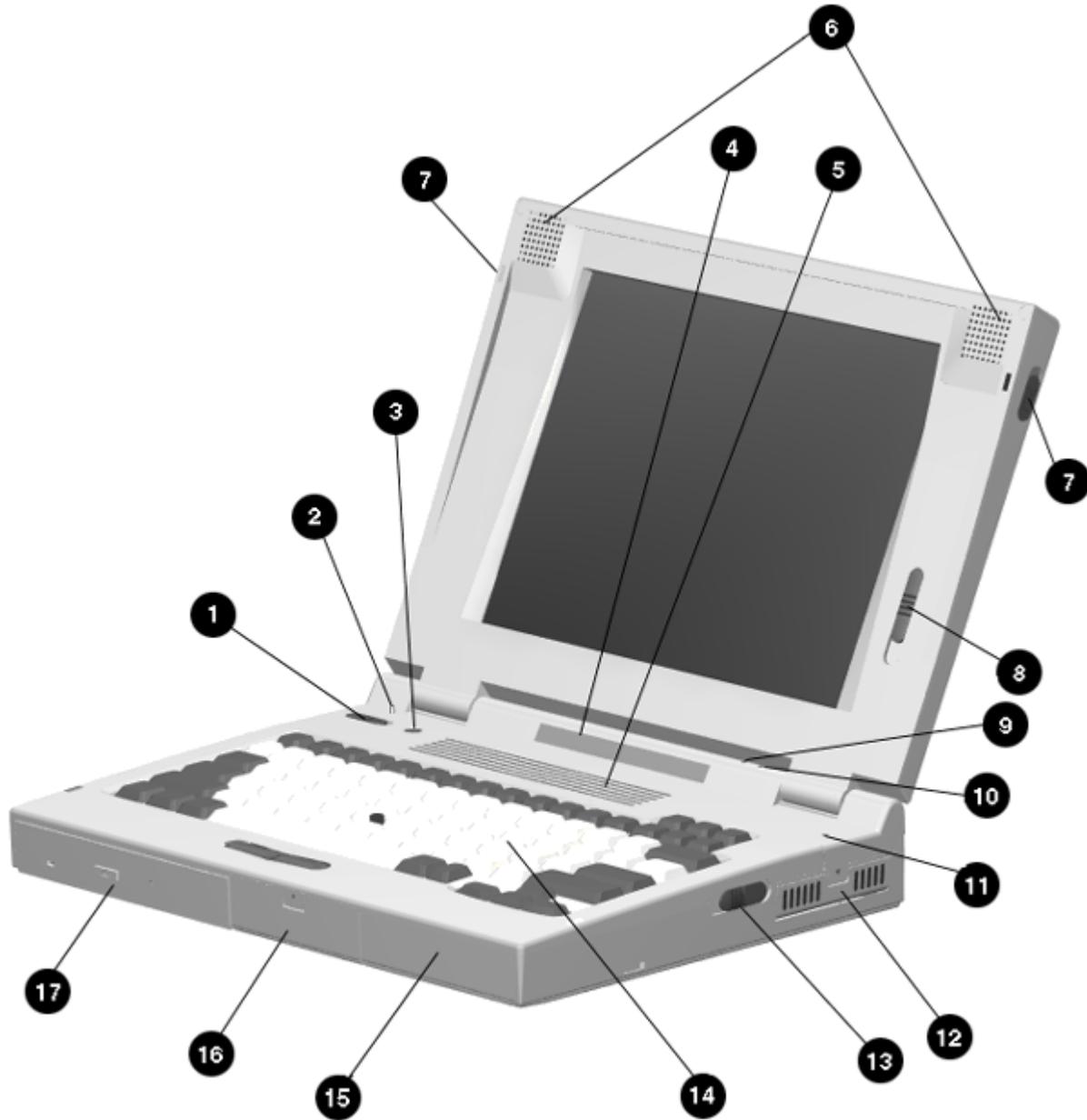
Figure 1-2. Computer Components - Front and Right Sides

Table 1-3. Computer Components - Front and Right Sides

```
===========================================================================
Item    Component              Function
===========================================================================
 1      Power switch           Turns the power on and off.
---------------------------------------------------------------------------
 2      Display switch         Turns display off and initiates beep if
                               display is closed with computer on. When
                               used with the standby button, restarts the
                               computer.
---------------------------------------------------------------------------
 3      Standby switch         Initiates/exits Standby. When used with
                               the display switch, restarts the
                               computer. When used with the Fn key,
                               initiates Hibernation.
---------------------------------------------------------------------------
 4      Status panel icons     The computer is connected to an external
                               power source.

                               QuickLock/QuickBlank has been initiated.
                               Type the power-on password on the
                               blank screen to exit
                               QuickLock/QuickBlank.

                               Power Management is turned on. Run
                               Computer Setup to view or change
                               Power Management settings.

                               A diskette drive in the MultiBay is
                               being accessed.

                               A hard drive in the dedicated hard
                               drive bay or a hard drive or CD-ROM
                               drive in the MultiBay is being accessed.

                               An external monitor is actively
                               displaying information.

                               The built-in speakers on the front of the
                               display or speakers or headphone
                               connected to the computer or expansion
                               base are turned on.

                               Num lock is on, which enables the
                               embedded numeric keypad.

                               Caps Lock is on, which causes new text
                               to be typed in uppercase letters.

                               Scroll Lock is on, which causes the
                               cursor to scroll by fields, rather than
                               by lines.

                               Battery gauges 1 and 2. Gauge 1 turns on
                               if a battery pack is in the dedicated
                               battery bay and shows the amount of
                               charge in the battery pack. Gauge 2 turns
                               on if a battery pack is in the MultiBay
                               and shows the amount of charge in that
                               battery pack.
```

Item	Component	Function
1	Power switch	Turns the power on and off.
2	Display switch	Turns off and initiates beep if display is closed with computer on. When used with the standby button, restarts the computer.
3	Standby (Suspend) button	Initiates/exits Standby (Suspend). When used with the display switch, restarts the computer. When used with the Fn key, initiates Hibernation.
4	Status Panel Icons	The computer is connected to an external power source.
		QuickLock/QuickBlank has been initiated. Type the Power-On Password on the blank screen to exit QuickLock/QuickBlank.
		Power Management is turned on. Run Computer Setup to view or change Power Management settings.
		A diskette drive in the MultiBay is being accessed.
		A hard drive in the dedicated hard drive bay or a hard drive or CD-ROM drive in the MultiBay is being accessed.
		An external monitor is actively displaying information.
		The built-in speakers on the front of the display or speakers or headphones connected to the computer or MulitBay Expansion Base are turned on.
		Num Lock is on, which enables the embedded numeric keypad.
		Caps Lock is on, which causes new text to be typed in uppercase letters.
		Scroll Lock is on, which causes the cursor to scroll by fields, rather than by lines.
		Battery gauges 1 and 2. Gauge 1 turns on if a battery pack is in the dedicated battery bay and shows the amount of charge in the battery pack. Gauge 2 turns on if a battery pack is in the MultiBay and shows the amount of charge in that battery pack.
5	Ventilation intake	Intake vents provide proper airflow to help prevent the computer from overheating.
6	Stereo speakers	Built-in stereo speakers for PC and multimedia sound system.
7	Latch	Secures computer in a closed poristion; release to open.
8	Brightness control	Adjusts the brightness of the display.
	Contrast control (not shown)	Adusts the contrast of the display (CSTN models)
9	Standby (Suspend) light (green)	Illuminates when power to the computer is turned on. Blinks to indicate computer is in Standby (Suspend).
10	Battery light (yellow)	Illuminates when a battery pack is charging; turns off when the battery pack is finished fast charging; blinks to indicate low battery.
11	Microphone	Built-in microphone for the Multimedia Sound System.
12	PC Card Slots	Accepts one Type III or two Type II or two Type I PC Cards (PCMCIA).

```
-----------------------------------------------------------------------
  5      Ventilation intake      Intake vents provide proper airflow to
                                 help prevent the computer from
                                 overheating.
-----------------------------------------------------------------------
  6      Stereo speakers         Built-in stereo speakers for PC and
                                 multimedia sound system.
-----------------------------------------------------------------------
  7      Latch                   Secures computer in a closed position;
                                 release to open.
-----------------------------------------------------------------------
  8      Brightness control      Adjusts the brightness of the display.

         Contrast control (not   Adjusts the contrast of the display
         shown)                  (CSTN models).
-----------------------------------------------------------------------
  9      Standby (suspend) light Illuminates when power to the computer
         (green)                 is turned on.  Blinks to indicate
                                 computer is in Standby (Suspend).
-----------------------------------------------------------------------
 10      Battery light (yellow)  Illuminates when a battery pack is
                                 charging; turns off when the battery
                                 pack is fully charged; blinks to
                                 indicate low battery.
-----------------------------------------------------------------------
 11      Microphone              Built-in microphone for the Compaq
                                 Sound System.
-----------------------------------------------------------------------
 12      PC Card slots           Accepts one Type III or two Type II or
                                 two Type I PC Cards (PCMCIA).
-----------------------------------------------------------------------
 13      Battery release         Releases a battery pack in the battery
                                 compartment.
-----------------------------------------------------------------------
 14      Keyboard                Keyboard with EasyPoint II pointing
                                 device and pick buttons.
-----------------------------------------------------------------------
 15      Battery compartment     Dedicated battery compartment for the
                                 main battery pack.
-----------------------------------------------------------------------
 16      Hard drive bay          Dedicated hard drive bay.
-----------------------------------------------------------------------
 17      MultiBay                Bay that supports multiple devices:
                                 CD-ROM drive, hard drive, battery pack,
                                 or diskette drive.
=======================================================================
```

The external components on the rear and left sides of the computer are
shown in Figure 1-3 and described in Table 1-4.
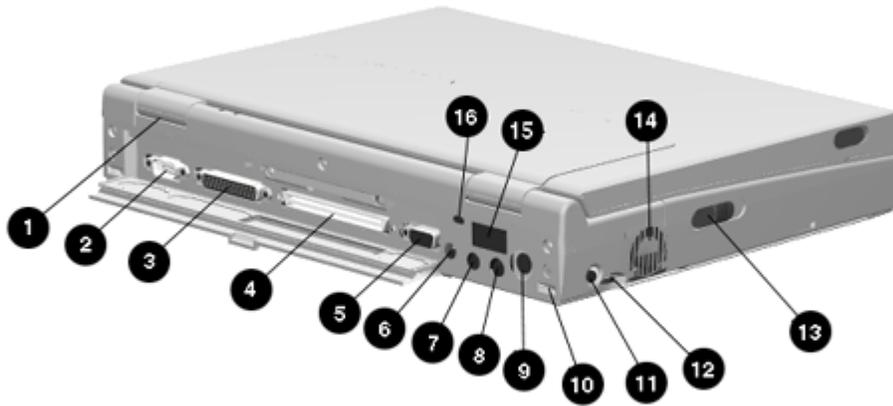
Figure 1-3. Computer Components - Rear and Left Sides

Table 1-4. Computer Components - Rear and Left Sides
===
Item   Component   Function
===
 1   Serial number   Identifies the computer.
----
 2   Serial connector   Connects optional serial devices.
----
 3   Parallel connector   Connects optional parallel devices.
----
 4   External options   Connects the expansion base or the
        connector   optional Automobile Adapter.
----
 5   External monitor connector   Connects an external monitor.
----
 6   Power connector   Connects the AC Adapter or the
                                     optional Automobile Adapter.
----
 7   Stereo speaker/headphone   Connects external speakers or
        jack   headphones.
----
 8   Stereo line in jack   Stereo line-in jack for CD player,
                                     tape deck, tuner, or other line level
                                     audio source.
----
 9   Keyboard/mouse connector   Connects an external keyboard, numeric
                                     keypad, PS/2 mouse, or other pointing device.

```
--------------------------------------------------------------------------------
10      Docking sensor               Access to a microswitch that initiates
                                     the docking scenario when the computer
                                     is being docked. Also serves as a
                                     guide for the MPEG Adapter.
--------------------------------------------------------------------------------
11      Mono microphone jack         Connects a powered electric condenser
                                     microphone.
--------------------------------------------------------------------------------
12      Volume control               Controls volume to the built-in
                                     speakers or to external speakers or
                                     headphones connected to the computer
                                     or MultiBay Expansion Base.
--------------------------------------------------------------------------------
13      MultiBay device release      Releases a drive or battery pack from
                                     the MultiBay.
--------------------------------------------------------------------------------
14      Ventilation exhaust          Exhaust vent for proper airflow to
                                     help prevent the computer from
                                     overheating.
--------------------------------------------------------------------------------
15      Infrared port                Transfers data to another computer or
                                     external device that accepts IrDA
                                     format.
--------------------------------------------------------------------------------
16      Security slot                Provision for an optional security
                                     cable lock to be attached to the
                                     computer.
================================================================================
```

Chapter 1.4 Design Overview - Computer

This section presents a design overview of the computer. The discussion is
limited to the field replaceable parts. All replaceable parts are
identified in Chapter 3, and removal/replacement procedures are presented
in Chapter 5.

The computer is a traditional clamshell design with a display unit and
system unit. The computer opens to reveal a backlighted LCD display and
keyboard. The display is designed for a continuously adjustable tilt
angle. The system unit houses the system board, processor board, power
board, keyboard, I/O ports, operator controls and indicators, mass storage
device bays, and battery bay.

The main components of the system unit include the following:

o Processor (Intel Mobile Pentium 75 MHz, 90MHz, 100MHz, 120MHz, 133mhz,
  or 150 MHz)

o System controller (OPTi 556/557/558N, OPTi 602A)

o VGA controller (Cirrus CL-GD754x)

o Keyboard controller (Intel 80C51SL)

o PCMCIA controller (Cirrus 6722)

o Super I/O (National 87334)

o Audio controller (ESS688 or ESS1688)

o Power controller (47P440AF)

The boards on which these controllers reside are identified in the
sections that follow.

1.4.1 Display Unit

The display unit includes the following field replaceable components:

o Display assembly

o Display bezel with speakers

o Release latches

o Brightness control actuator

o Contrast control actuator (CSTN models only)

o Clutch assemblies

o Compaq logo

Display Assembly

The display assembly is replaced as a complete unit that includes:

o LCD panel

o LCD inverter

o Display bezel

o Stereo speakers

o Clutch assemblies

o Release latches

o Brightness control actuator

o Contrast control actuator (CSTN models only)

NOTE: The display bezel, release latches, brightness/contrast control
      actuator(s), Compaq logo, and clutch assemblies can also be replaced
      individually. The speakers are permanently installed on the display
      bezel.

The following LCD panels are supported:

o 10.4-inch (26.4 cm) CSTN VGA Display (640 x 480)

o 11.3-inch (28.7 cm) CSTN SVGA Display (800 x 600)

o 10.4-inch (26.4 cm) CTFT VGA Display (640 x 480)

o 10.4-inch (26.4 cm) CTFT VGA Display (800 x 600)

o 11.3-inch (28.7 cm) CTFT SVGA Display (800 x 600)

o 12.1-inch (30.7 cm) CTFT SVGA (800 x 600)

o 12.1-inch (30.7 cm) CTFT 1024 x 768 Display

Both LCD panels have a controllable backlight intensity that can be
adjusted with a slide switch. The CSTN (dual scan) panels also have a
slide switch for contrast control.

The LCD panel inverter cable plugs into an 8-pin connector on the
processor board. The LCD cable plugs into a connector on the system board.
The inverters and cables differ according to the display type and
manufacturer and cannot be interchanged. All of the display cables are
routed to the system unit in the vicinity of the clutches.

NOTE: It is important that these instructions be followed when replacement
      of any part requires removal of the display assembly.

Slide the display assembly back in place and replace all screws. The
screws must be fully tightened to ensure that they do not touch the
expansion base sensor located near the left hinge. Failure to properly
seat the screws may prevent the unit from booting up.

NOTE: Use Fn+F4 hotkeys to switch between external, internal, and
      simultaneous display. (The CSTN 800 x 600 does not support
      simultaneous display.)

Display Bezel With Speakers

The display bezel attaches to the display unit with a snap action and is
secured with a screw at each corner. Screw covers are installed over the
screw heads. After removing these screws, use a Compaq bezel removal tool
to separate the bezel from the display assembly. The display bezel can be
removed without separating the display unit from the system unit.

The internal stereo speakers are 0.5-watt, 8-ohm, permanently installed in
the top corners of the display bezel and are installed as a unit with
cabling attached. The speaker cable is routed into the system unit and
connects to a 4-pin connector adjacent to the 30-pin LCD connector on the
system board. The CPU cover is easily removed from the system unit to
access this connector.

NOTE: Use Fn+F5 hotkeys to toggle speakers/headphones off and on.

Release Latches

The release latches serve to lock the display and system units together
when the computer is in the closed position. Each latch assembly consists
of three parts:

o Latch actuator

o Latch hook

o Latch spring

The release latch assembly is available as a field replaceable unit. The
display bezel must be removed to replace the latch assemblies.

The release latches are mounted in the display unit back cover. The
display bezel must be removed to access the latches. The latches snap into
place and require a simple depression of a tab to be released from the
display cover.

Brightness/Contrast Control Actuator(s)

The displays have a controllable backlight intensity that can be adjusted
with a slide switch. The CSTN panels also have slide switch for contrast
control. The actuators for these adjustments are available as field
replaceable units.

The brightness/contrast control actuator(s) (contrast control actuator on
CSTN displays only) are mounted on the display bezel with a snap action.
The display bezel must be removed to allow the tabs on the back side of
the actuator to be depressed for removal. When installing a display bezel,
make certain the brightness/contrast actuator(s) aligns with the
brightness/contrast control(s) in the display assembly.

Clutch Assemblies

The clutch assemblies provide the hinge function between the display unit
and system unit and also provide continuous tension that allows the
display unit to be positioned at any angle.

The clutch assemblies are available in pairs as field replaceable units.
Each clutch assembly is mounted to the display unit with two screws and to
the system unit with two screws. Removal and replacement of the clutch
assemblies requires removal of the display bezel and the CPU cover (on the
system unit).

Compaq Logo

The Compaq logo is installed on the back of the display unit. The location
for the logo is indicated by an ellipse embossed in the cover. The logo is
an adhesive-backed label that is available as a field replaceable unit.
The label indicates which processor is installed in the computer.

1.4.2 System Unit

The system unit contains the following field replaceable units:

o CPU cover

o Internal microphone

o Status panel

o Processor board

o Power board

o Cooling fan

o System board

o Memory expansion board (optional)

o Keyboard assembly

o Auxiliary battery

o Miscellaneous plastic parts

CPU Cover

The CPU cover is located above the keyboard and is secured in place with three screws on the rear panel of the system unit. Tabs on the front edge of the CPU cover engage slots across the top edge of the keyboard panel.

The CPU cover contains the actuators for the following:

o Power switch

o Standby (Suspend) button

o Display switch

The CPU cover with all switch actuators installed is available as a field replaceable unit. The switch actuators are also available as field replaceable units.

The power switch actuator and spring and the standby (suspend) button actuator and spring are removed by squeezing the actuator tabs on the underside of the CPU cover and pushing the buttons out of their mounting hole. The display switch actuator simply snaps out of its mounting hole from the underside of the CPU cover.

The CPU cover must be removed to service any of the above described switch actuators. The cover also must be removed to disconnect any of the display unit cables from the system unit, to remove the display unit, to service the status panel, and to remove the keyboard assembly.

Internal Microphone

The internal microphone is supported by the audio subsystem and connects

to the system board. It is an omnidirectional condenser microphone with a standard sensitivity of 40dB. The microphone is mounted in a rubber boot to provide acoustic isolation and is mounted at the right side of the keyboard, under the CPU cover.

Status Panel

The status panel is located immediately below the LCD panel on the system unit. The panel displays a series of icons to indicate system status as described in Table 1-3.

The status panel also contains two status indicator lights. The right indicator light provides battery status; the left indicator light provides power-on and Standby (Suspend) status. Access to the display panel for service requires removal of the CPU cover. The status display is secured with two screws. The status panel cable plugs into an 8-pin connector on the processor board.

Processor Board

The processor board supports the following:

o Processor

o DC-to-DC converter is used only with processors that operate at higher than 75 MHz.

o L2 cache

o System RAM

o System memory expansion connector

o Power, display, and standby switches

o Infrared serial port (IrDA)

o Display panel configuration jumpers

o Power-on password jumper

The computer supports 75, 90, 100, 120, 133-, and 150-MHz Mobile Pentium processors. The processor is soldered to the processor board, so replacement is accomplished by replacing the processor board. A heat sink on the processor and a cooling fan maintain an operating temperature within the limits specified by the CPU manufacturer and other components.

All I/O buffers operate at 3.3 volts.The 75-MHz processor core operates at 3.3 volts. The 150-MHz processor core operates at 3.1 volts. The 90-Mhz, 100mhz, 120-MHz, and 133-MHz processor cores operate at 2.9 volts. The 2.9 volts is provided by a DC-to-DC converter mounted on the processor board.

The processors are of a tape carrier package (TCP) design that has a high pin count, low profile, and reduced footprint. The processor is easily damaged, so the pins and body of the processor should not be touched.

The L2 cache is implemented as direct-mapped, write-back cache with a size of 256 KB.

The power switch, display switch, and standby (suspend) button are mounted on the processor board. They are operated by switch actuators mounted on the CPU cover.

The power switch turns system power on and off. When the switch is pushed to turn the power off, the system displays a warning message that all unsaved data will be lost. The shut down process is then completed by pressing Enter.

The display switch turns the display off and initiates a beep if the display is closed with the computer on. When used with the standby switch, the display switch initiates a system restart.

The standby (suspend) button initiates and exits Standby (suspend). As described above, the standby button, when used with the display switch, initiates a system restart. When used with the Fn key, the standby button initiates Hibernation.

The processor board contains 8 MB or 16 MB of onboard memory and can be expanded to 72 or 80 MB by adding a 64 MB memory expansion board. The memory expansion boards are available in 8, 16, 32, and 64 MB DRAM configurations. Each module is composed of two boards assembled together. The system ROM is shadowed in system memory.

The infrared subsystem (IrDA) provides two-way wireless communication using infrared as a transmission medium. Proper operation requires the communicating infrared ports to be within a 30-degree path and no more than three feet (1 meter) apart.

The processor board must be configured according to the display type. This is done by setting Jumpers JP2, JP3, and JP4 on the processor board. Use Table 1-5 to determine proper jumper settings for the display.

Table 1-5. Display Configuration Jumpers

Display Type	Jumper JP3	Jumper JP2	Jumper JP4
LTE 5000 10.4 in VGA CSTN	1-2	2-3	1-2
LTE 5000 10.4 in VGA CTFT	2-3	2-3	1-2
LTE 5000 11.3 in SVGA CSTN	1-2	2-3	2-3
LTE 5100 10.4 in SVGA CTFT	2-3	2-3	2-3
LTE 5200 10.4 in SVGA CTFT	2-3	2-3	2-3
LTE 5280 11.3 in SVGA CTFT	2-3	2-3	2-3
LTE 5300 12.1 in SVGA CTFT	2-3	2-3	2-3
LTE 5150 Rev. 4X 11.3 in SVGA CSTN	1-2	1-2	1-2
LTE 5150 Rev. 2X SVGA CSTN	2-3	1-2	1-2

LTE 5250 10.4 in SVGA CTFT	2-3	2-3	2-3
LTE 5380 12.1 in 1024 x 768 CTFT	2-3	1-2	1-2
LTE 5400 12.1 in 1024 x 768 CTFT	2-3	2-3	2-3

==

The power-on password jumper is also located on the processor board. To erase the power-on password, set jumper JP1 to pins 1 and 2; set JP1 to pins 2 and 3 for normal operation. See Chapter 2 for more details.

To remove and replace the processor board, you must first remove the CPU cover, EMI shield, keyboard, and display unit. The processor board is secured in place with two screws and is connected to the system board with two connectors.

System Board

There are three system boards for the computer: one to support the 75 MHz, 90 MHz and 120 MHz processors (LTE 5000, LTE 5100, and LTE 5200); one to support the 120 MHz, 100MHz, and 133 MHz processors (LTE 5280, LTE 5300, LTE 5150, and LTE 5250); and one to support the 133 MHz processor (LTE 5380) and 150MHz processor (LTE 5400). The system board supports the following:

o System ROM (BIOS)

o Graphics subsystem

o Audio subsystem

o PC Card subsystem

o Diskette drive controller

o RS-232 and IrDA serial ports

o IDE interface

o Fan connector

o I/O connectors

The firmware components for the computer include:

o System BIOS for the OPTi Viper Notebook chip set

o ROM-based setup

o MAXIMIZER Power Management for OPTi Viper

o APM 1.1 BIOS

o Plug and Play BIOS

o PCI BIOS

o Keyboard Controller Firmware for the Intel 80C51SL

o VGA BIOS

The ROM-based setup has been translated into ten languages in addition to English. Messages that are displayed by the BIOS which require no user interaction are displayed in English. This includes POST warning messages, error messages, and runtime warnings and notifications. Messages that are displayed by the BIOS which require user interaction are translated into the same language as Setup.

The graphics controller interfaces with the system through the PCI bus. The controller provides backward compatible modes to support CGA, EGA, MGA, and HGA as well as all current VGA and SVGA modes. The controller supports the internal LCD panels as well as an external CRT and simultaneously supports the LCD and CRT (except for models with the 11.3-in CSTN SVGA display). The CRT interface is also routed to the either expansion base through the external options connector. For LCD only and LCD/CRT simultaneous display modes, the following panel and color resolutions are supported:

Table 1-6. Maximum Resolutions Supported

Display Type	Display Modes	Color Depth Supported
640 x 480 CTFT	640 x 480	256, 64K, 16M
800 x 600 CTFT	640 x 480, 800 x 600	256, 64K
640 x 480 CSTN	640 x 480	256, 64K
800 x 600 CSTN	640 x 480, 800 x 600	256
1024 x 768 CTFT	1024 x 768	256

The graphics controller also supports display of real-time video from the MPEG and TV Video Adapter at a rate of 30 frames per second (fps). It provides the capability to overlay the video in a Windows screen.

The computer has 1 MB of video DRAM soldered to the system board. There is no provision for adding additional video memory.

The graphics subsystem is designed to minimize the use of power at all times. When the system is idle for a set period of time, the controller is placed in the lowest power state. The LCD panel backlight and panel power are turned off during periods of inactivity after a timeout as determined by the user in Computer Setup. The system supports Energy Star monitors and allows the feature to be turned on/off from Computer Setup.

The computer supports an interface to an MPEG and TV Video Adapter that attaches to the rear of the computer. The adapter provides up to 30 fps of live video or MPEG video to the graphics controller for display on the LCD, a CRT, or a television. The MPEG and TV Video Adapter and CD-ROM

drive can be used simultaneously.

The audio subsystem is integrated into the system board. The system
supports an internal microphone, stereo speakers, SoundBlaster PRO
compatible audio, CD-ROM audio inputs, an external jack for headphones or
speakers, microphone jack, and line-input jack. Line and CD-ROM inputs and
the speaker outputs are passed through the external options connector and
supported by both expansion bases.

The internal speakers are disabled when the computer is docked in the
expansion base and when headphones or external speakers are installed.

The heart of the audio subsystem is the ESS1688 (ESS688 on Windows 3.1/Dos
6 units) AudioDrive ASIC that provides 16-bit stereo WAV audio, audio
mixing, and FM music synthesis. The entire audio system connects directly
to the ISA bus.

The ESS1688 is OPL3 compatible and compatible with SoundBlaster PRO and
Microsoft Windows Sound System. It can record, compress, and play back
sound and music at 8 or 16 bits up to 44 Khz.

The computer has one PC Card (PCMCIA) controller that supports a Type III
PC card slot that supports either two Type II PC Cards or one Type III PC
Card. A PC card door prevents contamination of the slot. The controller is
Intel ExCA compatible and complies with the Berlin revision of the PCMCIA
standard. The controller supports 5-V cards and all current Compaq PC
Cards. A second PC Card controller is located in both expansion bases.

The diskette drive controller supports 720K, 1.2 MB, and 1.44 MB densities
as well as automatic media detection. Diskette drives can be used in the
computer MultiBay and the expansion bases. When using Windows 95, real
mode drivers must be used for a diskette drive in the expansion base. For
more information see "Solving Diskette and Diskette Drive Problems" in
Chapter 2.

The PC87334 Super I/O contains two UARTs which are fully compatible with
NS15450 and NS16550. Both ports support MIDI baud rates and one port also
supports IrDA and HP SIR compliant signaling protocol. The two serial
ports are configured as one RS- 232C serial port and one infrared (IrDA)
port.

o The standard RS-232 serial port has an 82550 compatible serial
  controller. The physical connector is a standard 9-pin D connector. The
  interface can be configured as COM1, COM2, COM3, or COM4.

o The infrared communication is implemented with an 82550 compatible
  serial controller. The minimum data rate supported by the Infrared Port
  is 115K bits per seconds. The interface can be configured as COM1, COM2,
  COM3, or COM4.

The parallel port support is integrated into the PC87334 Super I/O. The
computer has one parallel port that can be configured to operate in
compatible mode, enhanced modes 1.7 and 1.9 (EPP), and extended
capabilities (ECP) mode (IEEE-1284 compatible). The default mode is the
compatible mode. The physical connector is a standard 25-pin D connector.
The parallel port interface can be configured as LPT1, LPT2, or LPT3.

When the computer is mounted in either expansion base, the system can

support up to four IDE hard drives. When using two hard drives in the
computer, one of the hard drives is installed in the dedicated hard drive
bay and the other in the MultiBay.

NOTE: The dedicated hard drive bay provides limited support for the Compaq
      LTE Elite hard drive. See Appendix C for details.

The hard drive remains powered off from Standby (Suspend) until the first
access occurs. The hard drive is powered off during Standby (Suspend).

The cooling fan is mounted in the system unit on the left side at the
ventilation exhaust port. Functioning as an exhaust fan, it provides air
flow across the electronic components for cooling. The fan plugs into a
2-pin connector on the system board.

The I/O connector panel is an integral part of the system board. In
addition to the I/O panel, the system board supports the following:

o PC card rails and connectors

o Battery bay contacts

o Hard drive bay connector

o MultiBay mass storage device connector

o MultiBay battery contacts

o Power board connectors

o Processor board connectors

o Fan connector

o LCD panel connector

o Speaker connector

o Integrated microphone connector

o External microphone connector

o Volume control

The CPU cover, display unit, keyboard, processor board, and power board
must be removed prior to removing the system board. The system board is
secured with two screwlocks on the I/O connector panel, a standoff in the
left rear corner, and three screws.

IMPORTANT: Correct positioning of the system board is essential for proper
           interconnect of the computer with either expansion base. When
           installing a system board, be sure the locating pins near the
           mounting screws properly engage the system board.

A connector on the rear of the computer interfaces with either expansion
base to provide additional functionality. The expansion base replicates
the following computer connectors:

o Serial connector

o Parallel connector

o External monitor connector

o PS/2-compatible mouse connector

o Power connector

o External keyboard connector

o All audio connectors except mono microphone jack

Additional MultiBay Expansion Base and MultiBay ISA details are presented
in Section 1.5.

Power Board

The power board is a DC-to-DC converter that provides the required
voltages of +3.3 and +5 volts from one of the power sources (main battery
pack, AC Adapter, or Automobile Adapter).

The power board is provided as a field replaceable unit. To remove and
replace the power board, you must first remove the CPU cover, keyboard,
and processor board. The power board connects to the system board with two
connectors and is secured in place with one screw.

Keyboard

The keyboard is available as an assembly consisting of the following
parts:

o Keyboard

o Keyboard bezel

o Battery release

o MultiBay device release

o EasyPoint II controller

The battery release, MultiBay device release, and EasyPoint II controller
are also available as replaceable units.

To remove the keyboard assembly, the CPU cover must be removed first. The
keyboard ribbon cable (ZIF connector) and EasyPoint II controller cable
must be disconnected. Three screws on the bottom on the system unit and
four screws across the front (inside of the MultiBay and dedicated battery
compartment) must then be removed to release the keyboard.

The battery release mechanism consists of the following parts:

o Battery release actuator

o Battery release spring

o Battery release holder

o Battery release hook

o Battery release hook spring

All of these components are included in the Latches Kit.

The battery release spring maintains the mechanism in the latched state
until the release actuator is pushed. This action retracts the release
hook from the battery. The release hook spring ensures that the battery
hook firmly engages the battery. The battery release holder serves as a
mounting platform for the other release mechanism components. The release
hook and release hook spring are fastened to the release holder with a
screw. The release spring connects the release actuator to the holder. The
holder is held to the bottom of the keyboard with two screws.

The MultiBay device release mechanism is very similar to the battery
release mechanism and consists of the following parts:

o MultiBay device release actuator

o MultiBay release spring

o MultiBay release holder

o MultiBay release hook

o MultiBay release hook spring

o CD-ROM drive release bar

All of these components are included in the Latches Kit.

The MultiBay device release spring maintains the mechanism in the latched
state until the release actuator is pushed. This action retracts the
release hook from the diskette drive or hard drive. Pushing the release
actuator also causes the CD-ROM drive release bar to eject a CD-ROM drive
if one is installed. The release hook spring ensures that the release hook
firmly engages the device in the MultiBay. The MultiBay release holder
serves as a mounting platform for the other release mechanism components.
The release hook and release hook spring are fastened to the release
holder with a screw. The release spring connects the release actuator to
the holder. The holder is held to the bottom of the keyboard with a screw
and standoff.

The EasyPoint II controller supports the mouse buttons and the EasyPoint
II pointing stick. It is mounted to the bottom of the keyboard assembly
directly under the mouse buttons. The CPU cover and keyboard must be
removed to gain access to the controller. Two screws hold the controller

to the keyboard. Once released, the flat cable can be disconnected from
the ZIF connector on the underside of the controller.

MultiBay

The MultiBay accommodates the following devices:

o Dual-speed, quad-speed, or 6x CD-ROM drive

o Second hard drive

o Second battery pack

o 3.5-inch diskette drive

NOTE: The hard drive must be mounted in the MultiBay hard drive carrier
      before it can be installed into the MultiBay.

The computer must be turned off when inserting a drive (not the battery
pack) or removing it from the MultiBay.

Chapter 1.5 Optional MultiBay Expansion Base and MultiBay ISA Expansion Base Features

The MultiBay Expansion Base and MultiBay ISA Expansion Base provide fully
integrated desktop capabilities for the computer. The expansion base
eliminates the need to disconnect external devices when you remove the
computer from the expansion base. The optional expansion base has the
following features:

o Two MultiBay device bays

o One serial port

o One parallel port

o PS/2 mouse port

o External keyboard port

o One SVGA CRT port

o Ethernet RJ-45 and BNC ports

o Two Type III PC Card slots

o Audio line out, headphones out

o Audio line in

o IR interface for IrDA wireless operations

o Battery charge indicators

o Drive activity indicators

o Security features

o Stereo speakers

o ISA expansion slot (MultiBay ISA Expansion Base)

o High performance stereo speakers and new audio bass ports on both sides
  of the expansion base for Compaq PremierSound audio system (MultiBay ISA
  Expansion Base)

Chapter 1.6 MultiBay Expansion Base and MultiBay ISA Expansion Base Components

The external components on the front and right sides of the expansion base
are shown in Figure 1-4 and described in Table 1-7.
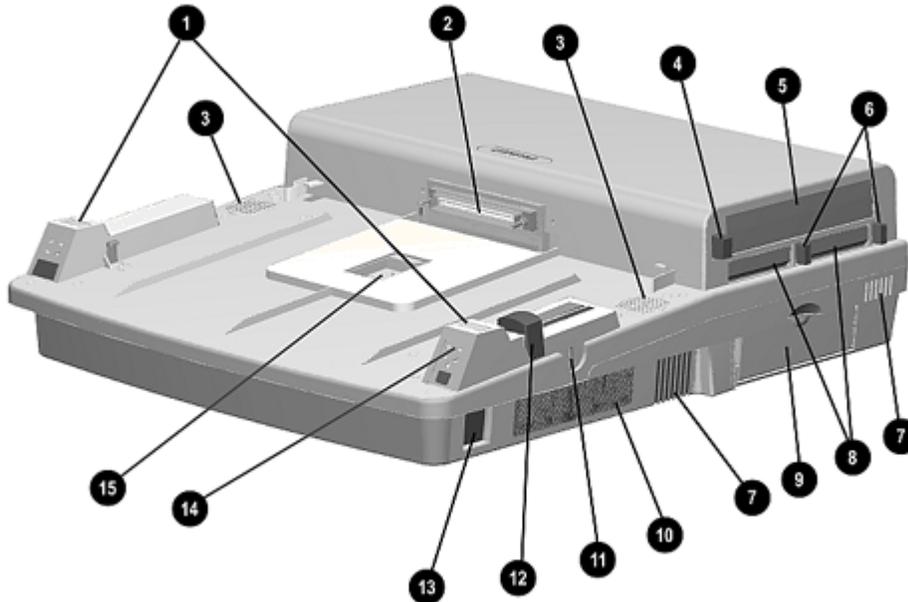
Figure 1-4. Expansion Base Components - Front and Right Sides (MultiBay-ISA
Illustrated)

```
Table 1-7. Expansion Base Components - Front and Right Sides
===========================================================================
Item       Description
===========================================================================
 1         Monitor support cover slots

 2         External options connector

 3         Stereo speakers (MultiBay Expansion Base model)
```

```
   4         MultiBay II device release button

   5         MultiBay II

   6         PC Card release buttons

   7         Ventilation exhausts (MultiBay ISA Expansion Base model)

   8         PC Card slots

   9         ISA slot access door (MultiBay ISA Expansion Base model)

  10         Stereo speaker (MultiBay ISA Expansion Base model)

  11         Security cable slot

  12         Docking lever

  13         Audio bass port (MultiBay ISA Expansion Base model)

  14         Battery lights

  15         Docking aid
===============================================================================
```

Additional components on the front of the expansion base and the
components on the left side of the expansion base are shown in Figure 1-5
and described in Table 1-8.
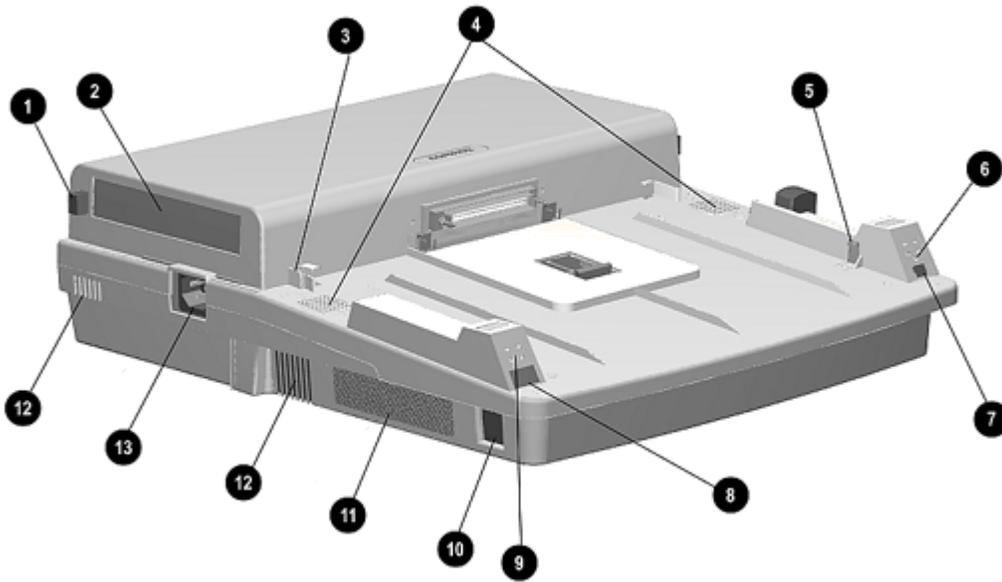
Figure 1-5. Expansion Base Components - Front and Left Sides (MultiBay-ISA Illustrated)

```
Table 1-8. Expansion Base Components - Front and Left Sides
============================================================================
Item       Description
============================================================================
 1         MultiBay I device release button

 2         MultiBay I

 3         Docking sensor probe

 4         Stereo speakers (MultiBay Expansion Base model)

 5         Alignment guide

 6         Power light

 7         Power button

 8         Infrared port

 9         MultiBay drive lights

10         Audio bass port (MultiBay ISA Expansion Base model)

11         Stereo speaker (MultiBay ISA Expansion Base model)

12         Ventilation exhaust (MultiBay ISA Expansion Base model)
```

```
13          AC power connector
===============================================================================
```

The external components on the rear panel of the expansion base are shown
in Figure 1-6 and described in Table 1-9.
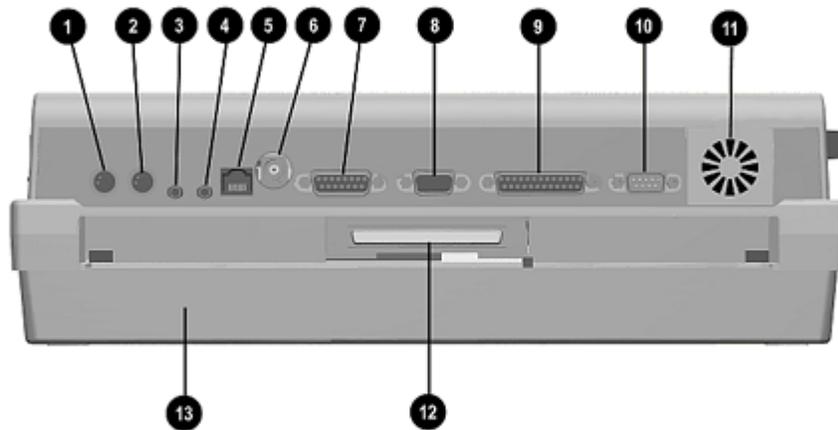
Figure 1-6. Expansion Base Components - Rear Panel (MultiBay-ISA Illustrated)

```
Table 1-9. Expansion Base Components - Rear Panel
===============================================================================
Item        Description
===============================================================================
 1          External mouse connector

 2          External keyboard connector

 3          Stereo speaker/headphone jack

 4          Stereo line in jack

 5          Ethernet RJ-45 connector

 6          Ethernet BNC connector

 7          MIDI/Game connector

 8          External monitor connector
```

```
 9          Parallel connector

10          Serial connector

11          Auxiliary fan (MultiBay ISA Expansion Base model)

12          MPEG and TV Video Adapter connector

13          ISA slot cover (MultiBay ISA Expansion Base model)
===============================================================================
```

Chapter 1.7 Design Overview - MultiBay Expansion Base and MultiBay ISA Expansion Base

```
In addition to replicating the computer I/O panel and offering additional
mass storage device bays, the expansion bases include the following:


o Main board with integrated Ethernet

o MultiBay connector board

o Power supply

o IrDA interface

o Activity lights

o MultiBays with ejectors

o PC Card slots

o ISA expansion board slot (MultiBay ISA Expansion Base model)

o Computer docking mechanism

1.7.1 Main Board


The expansion base main board supports the following major components:


o Ethernet controller (National DP83907)

o PCMCIA controller (Cirrus 6722)

o Super I/O (National 87334)

o Power controller (TMP47P440AF)


The Ethernet controller supports an integrated 10MB/sec Ethernet
subsystem with 10BaseT and 10Base2 interfaces. The Super I/O component
supports the MultiBays.


1.7.2 MultiBay Connector Board
```

The MultiBay connector board is mounted between the two MultiBays and serves to route the appropriate signals to the MultiBay connectors.

1.7.3 Power Supply

The power supply is an AC-to-DC converter that serves the same function as the AC adapter and DC-to-DC converter in the computer. It provides regulated DC power for all of the subsystems. The expansion base uses a standard AC power cord that connects directly to the power supply.

An external fan mounted on the power supply provides cooling. When the temperature of the power supply exceeds 104oF (40oC), the fan turns on. When the temperature drops below 104oF, the fan turns off.

The MultiBay ISA model has an auxiliary cooling fan mounted on the rear of the bottom case. The auxiliary fan remains active as long as power is applied to the MultiBay ISA Expansion Base.

1.7.4 IrDA Interface

The IrDA interface is mounted on the front left corner of the expansion base and shares a small PCB with the removable drive status lights. The board is mounted to the underside of the expansion base top cover with a single screw. The IrDA interface on the expansion base replicates the IrDA interface on the computer.

1.7.5 Activity Lights

The expansion base has two sets of activity lights.

Removable-Drive Lights

The removable-drive lights are installed on the front left of the expansion base and share a small PCB with the IrDA interface. The board is installed as a unit from the back side of the expansion base top cover. The status lights are identified in Figure 1-7 and described in Table 1-10.
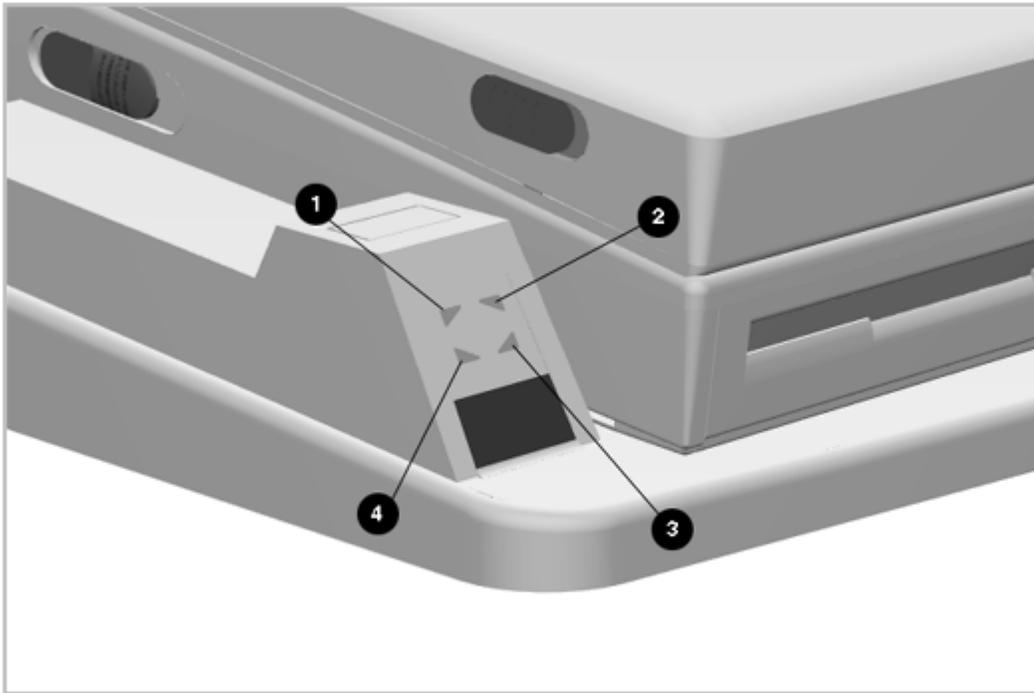
Figure 1-7. Removable Drive Lights

Table 1-10. Removable Drive Lights
==
Index   Function   Description
==
1   Computer diskette drive light Diskette drive in computer MultiBay
                                      is being accessed

2   Computer hard drive/CD-ROM   Hard drive or CD-ROM drive in
        drive light   computer is being accessed

3   MultiBay hard drive/CD-ROM   Hard drive or CD-ROM in one of the
        drive light   expansion base MultiBays is being
                                      accessed.

4   MultiBay diskette drive light Diskette drive in one of the
                                      expansion base MultiBays is being
                                      accessed
==

Battery Lights

The battery lights are installed on the front right of the expansion base
and share a small PCB with the power button and power light. The board is
installed as a unit from the back side of the expansion base top cover.
The battery lights are identified in Figure 1-8 and described in Table
1-11.
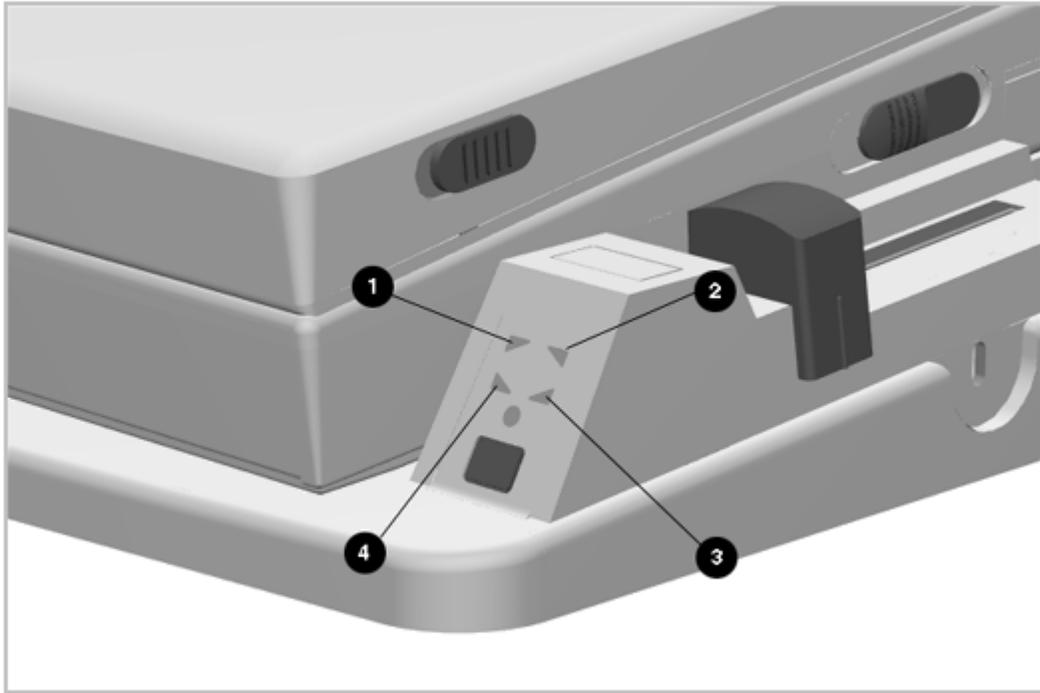
Figure 1-8. Battery Lights

```
Table 1-11. Battery Lights
===========================================================================
Index     Function                      Description
===========================================================================
1         Computer MultiBay battery     Status of battery pack in computer
          light                         MultiBay

2         Computer battery light        Status of battery pack in computer
                                        battery compartment

3         MultiBay II battery light     Status of battery in MultiBay on
                                        the right side of the expansion
                                        base

4         MultiBay I battery light      Status of battery in MultiBay on
                                        the left side of the expansion
                                        base
===========================================================================
```

1.7.6 MultiBays with Ejectors

Each expansion base has two MultiBays. Each MultiBay is removable as a
unit with its ejector mechanism. The MultiBay is held to the expansion
base cover with three screws. The MultiBays in the expansion base
accommodate the same drives that are used by the computer and can be used

to charge batteries. MultiBay I will accept Compaq LTE Elite hard drives.

1.7.7 PC Card Slots

Each expansion base has two Type III PC Card slots that function similarly
to the PC card slots on the computer. Each PC Card slot on the expansion
base supports one Type I, one Type II, or one Type III PC Card. The only
serviceable part of the PC card slots are the slot doors. The rails and
connectors are incorporated into the main board.

1.7.8 Computer Docking Mechanism

The computer docking mechanism has a lever that protrudes from the right
side of either expansion base and serves to aid in seating the computer
when it is pushed toward the rear of the expansion base. The lever
releases the computer from the expansion base when it is pushed toward the
front of the expansion base.

1.7.9 ISA Expansion Board

The MultiBay ISA Expansion Base provides one slot for an 8- or 16-bit,
full-length industry-standard (ISA) expansion board.

The following provisions must be considered when choosing the type of ISA
expansion board to be installed in the expansion base:

o The enhanced video performance of the Compaq LTE 5000 Family of Personal
  Computers drives an external monitor at resolutions up to 1024 x 768 x
  256 colors and at selectable refresh rates up to 72 Hz, making the use
  of ISA graphics controller boards unnecessary. If an ISA graphics
  controller card is installed, the system will not operate. Graphics
  controller boards are not supported.

o If a National NE2000 or compatible network ISA board is installed, the
  built-in ethernet connectors in the expansion base are disabled. To
  re-enable the built-in ethernet network feature, the NE2000 or
  compatible network ISA expansion board must be removed.

  Two Network Interface Cards (NICs) can be enabled at one time as long as
  both are not NE2000 or compatible.

  NOTE: NICs that have a default address of 300h require setup
        configuration changes because the built-in ethernet uses the 300h
        address.

o Some Moving Picture Experts Group (MPEG) ISA boards cannot be installed
  as they require connection to the "feature connector" of the graphics
  controller. This feature connector is not provided on the MultiBay ISA
  Expansion Base. MPEG ISA boards with a standard video port (external
  monitor connector) that do not require connection to the feature
  connector on the graphics controller should function satisfactorily.

The Compaq MPEG and TV Video Adapter option provides enhanced MPEG
capabilities for use with the Compaq LTE 5000 Family of Personal
Computers. To achieve maximum MPEG functionality support, use the Compaq
MPEG and TV Video Adapter option.

o Due to the vast numbers of ISA expansion boards that are available,
  Compaq does not guarantee or support every ISA expansion board.

  Refer to the documentation accompanying the ISA expansion board being
  installed for complete installation and configuration instructions.

Chapter 2. Troubleshooting

Chapter 2.0 Introduction

This chapter contains troubleshooting information for the computer. The
basic steps in troubleshooting include:

1. Completing the preliminary steps listed in Section 2.1.

2. Running the Power-On Self-Test (POST) as described in Section 2.4.

3. Running the Computer Checkup (TEST) as described in Section 2.5.

4. Performing the recommended actions described in the diagnostic tables
   in Section 2.7 if you are unable to exercise POST or Computer Checkup
   or if the problem persists after running POST and Computer Checkup.

Adhere to the following guidelines when troubleshooting:

o Complete the recommended actions in the order in which they are given.

o Repeat POST and Computer Checkup after each recommended action until the
  problem is resolved and the error message does not return.

o Once the problem is resolved, do not complete the remaining recommended
  actions.

o Refer to Chapter 5 for any removal and replacement procedures that are
  recommended.

Chapter 2.1 Preliminary Steps

IMPORTANT: Use the AC adapter when running POST, Computer Setup, or
           Computer Checkup. A low battery condition could initiate
           Standby (Suspend) and interrupt the test.

Before running POST and Computer Checkup, complete the following steps:

1. If a power-on password has been established, type the password and
   press Enter.

NOTE: The key icon appears on the status display when the computer is
      turned on to indicate that QuickLock/QuickBlank has been initiated.
      Type the power-on password to exit QuickLock/QuickBlank. If the
      password is unknown, it must be cleared (see Section 2.2).

2. Run Computer Setup (Section 2.3).

3. Position the brightness control actuator and contrast control actuator
   (on selected models) in the center of their ranges and leave the

display open.

4. Turn off the computer and all external devices.

5. Disconnect any external devices that you do not want to test. If you
   want to use the printer to log error messages, leave it connected to
   the computer.

NOTE: If a problem only occurs when an external device is connected to the
      computer, the problem could be with the external device or its
      cable. Isolate the problem by running POST with and without the
      external device connected.

6. Use Advanced Diagnostics and loopback plugs in the serial and parallel
   connectors if you plan to test these ports. To run Advanced
   Diagnostics, complete the following steps:

   a. Insert the Diagnostics diskette into the diskette drive and turn on
      the computer.

   b. At the Welcome Screen, press Ctrl + A.

   c. Press Enter to accept OK.

   d. Select Computer Checkup (TEST).

   e. Select Prompted Diagnostics after "Identifying System Hardware"
      completes.

   f. Select Interactive Testing and follow the displayed instructions.

Refer to Chapter 3 for description and spare part number for the loopback
plugs.

7. Ensure that the primary hard drive is installed in the computer.

8. Ensure that the battery pack is installed in the computer and the AC
   Adapter is connected to the computer and plugged into an AC power
   source.

After completing the preliminary steps, run POST (Section 2.4) and
Computer Checkup (Section 2.5).

Chapter 2.2 Clearing the Power-On and Setup Passwords

The power-on password prevents use of the computer until the password is
entered. The setup password prevents unauthorized changes to Computer
Setup. To clear the passwords, you must remove and replace a jumper on the
system board. If you do not know the passwords, use the following
procedure to clear the password:

1. Complete the preparation for disassembly procedures in Section 5.3.

2. Remove the CPU cover as described in Section 5.5.

3. Move the jumper on JP1 (Figure 2-1) from pins 2 and 3 to pins 1 and 2.
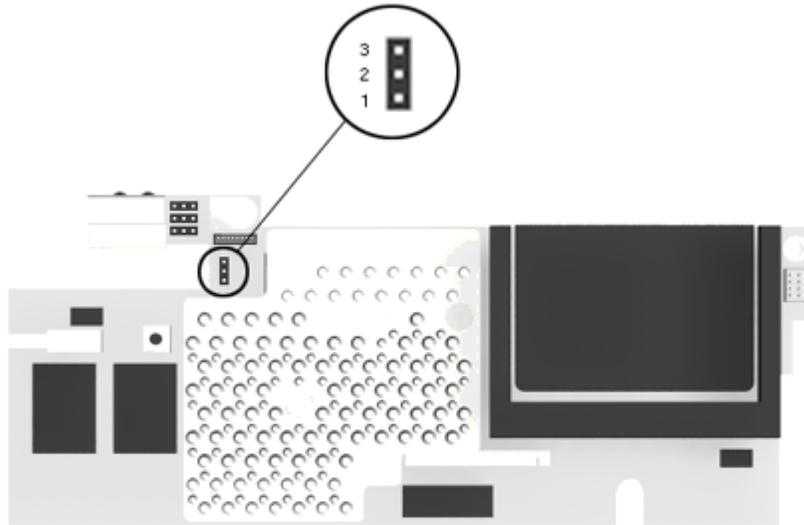
Figure 2-1. Password Jumper

4. Turn on the computer and run POST.

5. Turn off the computer and move the JP1 jumper to pins 2 and 3 for
   normal operation.

Chapter 2.3 Running Computer Setup

The ROM-based Computer Setup displays the current system configuration and
allows you to set system and power management parameters. These parameters
are stored in CMOS, and a backup copy is saved in a parameter block in
system flash ROM.

You can access Computer Setup by pressing F10 when the prompt appears
after you turn on or restart the computer. The following configuration
parameters can be changed in Computer Setup:

o Date and time

o Power conservation (when)

o Power conservation (level)

o PC Card slot power management

o Hibernation on/off

o Hibernation settings

o Warning beep

o Setup password

o Diskette drive disable

o Serial/IrDA ports disable

o Parallel port disable

o PC Card slots disable

o Resume password on/off

o Boot memory test

o Keyboard numlock

o Boot sequence

o Boot display

o Serial port settings

o Infrared port settings

o Parallel port settings

o Power-on password

o Diskette drive boot disable

o NTSC/PAL

o Windows 95 Power Properties

o Lid closure notification

o Advanced LPT mode

Computer Setup automatically recognizes and configures the system for new
Compaq devices. It does this without prompting you for information about
the devices. However, if you add a memory expansion board, the next time
you turn on the computer a prompt appears notifying you of the new memory
configuration.

The first Computer Setup screen displays current settings for the system,
ports, and devices. The status bar at the bottom of the screen gives
instructions for navigating and choosing options. The status bar also
displays descriptions as you highlight menus and menu options.

NOTE: If the main system board is replaced, the serial number on this
      screen changes to 0 (zero).

Select one of the menus from the menu bar at the top of the screen to view
or to change the following configuration settings:

o Initialization startup preferences

o Ports, including serial/infrared, parallel, Ethernet, and MPEG

o Power, including Power Management and Hibernation

o Security, including setup and power-on passwords and disabling devices

2.3.1 Initialization Menu

Select the Initialization menu to set the date and time and to change the
initialization (startup) settings for running the POST memory tests,
numlock on or off, the drive boot sequence, boot display, and lid closure
notification.

NOTE: The boot sequence sets the order in which the system searches for a
      bootable drive to start the computer. Before changing the booting
      sequence, see "The Hard Drive Boot Sequence" in Appendix C for more
      information.

2.3.2 Ports Menu

Select the Ports menu to change the default input/output (I/O) addresses
and interrupt requests (IRQs) for serial/infrared, parallel, and Ethernet
ports, select PAL or NTSC for the optional MPEG video format, and enable
Advanced LPT mode.

NOTE: If you select conflicting settings for the ports, the system
      automatically changes one of the settings.

2.3.3 Power Menu

Select the Power menu to enable or disable Power Management, PC Card slot
power management (not available on LTE 5000, LTE 5100, and LTE 5200
models), low-battery warning beeps, and an external energy saving monitor.
The factory default settings are:

o Power Management Enabled While on Battery

o Conservation Level Medium

o Low-Battery Warning Beeps Enabled

o External Energy Saving Monitor Disabled

o PC Card Power Off During Standby

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> CAUTION <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

If you disable Power Management or Hibernation, you must take immediate
action to resolve a low-battery condition to prevent losing unsaved
information.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

If you select to disable the low-battery warning beeps, a low-battery
condition is indicated only by a blinking battery light. If you disable
Power Management or Hibernation, information in memory is not
automatically saved during a critical low-battery condition.

If you enable the selection for an external energy saving monitor, it
enters low-power mode when the screen timeout occurs. If you enable this
selection and you do not have an energy saving monitor, the screen display
may become distorted.

Under PC Card slot power management, resume power to the PC Card slots and
ring reserve feature may be enabled during Standby (Suspend). This feature
is not available on the LTE 5000, LTE 5100, and LTE 5200 models.

Under Power Management, you can select whether to enable Power Management
while on AC or battery power, only while on battery power, or never
(disabled).

If you enable Power Management, you can select the conservation level:
high, medium, or custom. The conservation level sets the timeouts for
Standby (Suspend), Hibernation, drives, and screens.

A timeout is a period of inactivity after which power is turned off to the
system or component. Refer to Chapter 7 for more information about Standby
(Suspend) and Hibernation.

o High: - Provides the maximum amount of power conservation and the
  maximum battery operating time from a single charge.

o Medium (default): - Provides a balance between performance and battery
  life.

o Custom: - Conserves power according to specified timeout settings.

NOTE: Selecting to disable the infrared port under the Security menu also
      conserves power.

Windows 95 Power Properties

To open the Windows 95 Power Properties dialog box, double click the Power
icon in Control Panel. Windows 95 provides the following options:

o Advanced (default) - Activates power management settings in Computer
  Setup and provides some additional power-saving features.

o Standard - Activates the settings in Computer Setup.

o Off - Turns off all power management. The power management icon on the
  status panel turns off.

NOTE: You can also temporarily toggle power management off and on by
      pressing the Fn+F7 hotkeys. The next time you restart the computer,
      the Power Properties setting takes effect.

2.3.4 Security Menu

Select the Security menu to set, change, or delete the setup and power-on
passwords, and to enable/disable QuickLock/QuickBlank, power-on password
from Standby, diskette drives, ports, and PC Card slots.

Setup Password

Use the Setup password to protect the system configuration from
unauthorized changes. After you establish the setup password, you cannot
change the system configuration until you enter the setup password.

  IMPORTANT: Type carefully because the password does not display as you
             type it. If you choose to, you can use the same password for
             setup and for power-on.

The next time you press F10 (after POST) to run Computer Setup, a password
prompt appears on the screen. If you enter the password incorrectly, you
are prompted to reenter the password.

If you forget your setup password, you cannot change the system
configuration until the computer memory is cleared of the password.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> CAUTION <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Record your setup password and put it in a safe place. If you forget your
setup password, you cannot reconfigure the computer until the computer
memory is cleared of the password.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Power-On Password

The power-on password prevents use of the computer until the password is
entered. After you establish the power-on password, you must enter it
whenever you turn on the computer.

  IMPORTANT: Type carefully because the password does not display as you
             type it. If you choose to, you can use the same password for
             setup and for power-on.

You can also select to require the power-on password when exiting Standby
(Suspend).

The next time you start the computer or exit Standby (Suspend), a password
prompt appears. If you enter the password incorrectly, you are prompted to
reenter the password.

If you forget your power-on password, you cannot use the computer until
the computer memory is cleared of the password.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> CAUTION <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Record your power-on password and put it in a safe place. If you forget
your power-on password, you cannot use the computer until the computer
memory is cleared of the password.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

QuickLock/QuickBlank

Enabling QuickLock/QuickBlank allows you to temporarily disable the
keyboard and clear the screen until the power-on password is entered.
After you have enabled QuickLock/QuickBlank, you can initiate it at any
time by pressing the Fn+F6 hotkeys.

When QuickLock/QuickBlank is initiated, the key icon on the status panel
turns on. Type your power-on password on the blank screen to exit
QuickLock/QuickBlank.

Disabling Devices

The Security Menu provides a way to disable the following devices:

o Serial and infrared ports

o Parallel port

o PC Card slots

o Diskette drive

Disabling these devices prevents the unauthorized transfer of data using
the devices. Disabling the infrared port also conserves power. To reenable
a device, deselect the Disable option and restart the computer.

2.3.5 Exit Menu

The Exit menu has three options:

o Save and Exit: Saves configuration changes, but some changes do not take
  effect until the computer is restarted.

o Exit (No Save): Exits and does not save the changes you have made.

o Restore Factory Defaults: Replaces the current configuration settings
  with the original factory default settings.

Chapter 2.4 POST Error Messages

This chapter contains typical error messages that you may encounter during the power-on self-test (POST). POST is a series of tests that run every time you turn on the computer. POST verifies that the system is configured and functioning properly. A successful POST is followed by one or two short beeps.

If you receive an error message listed below, follow the recommended action. If you receive an error message that is not listed, contact your Compaq authorized service provider. You may also want to run Computer Checkup from the Diagnostics diskette. Information about running Computer Checkup is presented later in this section.

If POST detects an error, one of the following events occurs:

o A message with the prefix "WARNING" appears informing you where the error occurred. The system pauses until you press F1 to continue.

o A message with the prefix "FATAL" appears informing you where the error occurred. After the message, the system emits a series of audible beeps. The system then stops.

o The system emits a series of audible beeps. The system then stops.

Warning messages indicate a potential problem exists such as a system configuration error. When F1 is pressed, the system should resume. You should be able to correct problems that produce WARNING messages.

IMPORTANT: When a WARNING message includes the prompt to "RUN SCU," run Computer Setup. (Computer Setup replaces the SCU utility.)

Fatal errors emit a beep and may display a FATAL message. Fatal errors indicate severe problems, such as a hardware failure. Fatal errors do not allow the system to resume. Some of the Fatal error beep codes are listed at the end of this section.

Table 2-1. Warning Messages
===
| Message | Description |
===
| Clock not ticking correctly | The real time clock is not ticking. |

| CMOS checksum invalid, run SCU | CMOS RAM information has been corrupted and needs to be reinitialized by running Computer Setup. |

| CMOS failure, run SCU | CMOS RAM has lost power and needs to be reinitialized by running Computer Setup. |

| Floppy controller failed | The diskette drive controller failed to respond to the reset command. Power down the system and check all appropriate connections. If the diskette drive controller continues to fail, you may need to replace the system board. |

```
Floppy disk track 0 failed      The diskette drive cannot read track 0 of the
                                diskette in the drive. Try another diskette.
                                If the problem persists, you may need to
                                replace the diskette drive.
-------------------------------------------------------------------------------
Floppy information invalid,     The drive parameters stored in CMOS RAM do
run SCU                         not match the diskette drives detected in the
                                system.
-------------------------------------------------------------------------------
Hard disk controller error      The hard drive controller failed to respond
                                to the reset command. Check the drive
                                parameters.  Power down the system and check
                                all appropriate connections.
-------------------------------------------------------------------------------
Hardware information does        The video adapter type specified in CMOS RAM
not match video card, run        does not match the installed hardware.
SCU
-------------------------------------------------------------------------------
Keyboard controller failure      The keyboard failed the self-test command.
-------------------------------------------------------------------------------
Keyboard failure                 The keyboard failed to respond to the RESET
                                ID command.
-------------------------------------------------------------------------------
No interrupts from Timer 0       The periodic timer interrupt is not
                                occurring.
-------------------------------------------------------------------------------
RAM parity error at              A RAM parity error occurred at the specified
location xxxx                    (hex) location.
-------------------------------------------------------------------------------
ROM at xxxx (LENGTH yyyy)        An illegal adapter ROM was located at the
with nonzero checksum (zz)       specified address. An external adapter (such
                                as a video card) may be causing the conflict.
-------------------------------------------------------------------------------
Time/Date corrupt - run SCU      The time and date stored in the real time
                                clock have been corrupted, possibly by a
                                power loss.
-------------------------------------------------------------------------------
Unexpected amount of             The amount of memory detected by POST does
memory, run SCU                  not match the amount specified in CMOS RAM.
-------------------------------------------------------------------------------
Hard disk xx failure             A failure or an error occurred when trying to
(or error)                       access the hard drive.
===============================================================================
```

Table 2-2. Fatal Error Messages

Message	Description	Beep Code
CMOS RAM test failed	A walking bit test of CMOS RAM location 0E (Hex) - 3F (Hex) failed.	3
DMA controller faulty	A sequential read/write of the transfer count and transfer address registers within the primary and secondary DMA controllers failed.	4
Faulty DMA page registers	A walking bit read/write of the 16 DMA controller page registers starting at location 80 Hex failed.	0

```
Faulty refresh          A continuous read/write test of port      1
circuits                61h found that bit 4 (Refresh Detect)
                        failed to toggle within an allotted
                        amount of time.
-------------------------------------------------------------------------------
Interrupt controller    A sequential read/write of various         5
failed                  Interrupt Controller registers failed.
-------------------------------------------------------------------------------
ROM checksum incorrect  A checksum of the ROM BIOS does not        2
                        match the byte value at F000:FFFF.
-------------------------------------------------------------------------------
RAM error at location   RAM error occurred during memory test.    None
xxxx
-------------------------------------------------------------------------------
Parity error at         Parity error occurred.                    None
unknown location
===============================================================================
```

The following table lists some of the Fatal Error beep codes, along with
the beep sequence (short, long, pause) and the meaning of the beeps.

Table 2-3. Fatal Error Beep Codes

Beep Code	Beep Sequence	Explanation	Remedy
0	S-S-S-P-S-S-L-P	The DMA page registers are faulty.	Replace system board.
1	S-S-S-P-S-L-S-P	The refresh circuitry is faulty.	Replace system board.
2	S-S-S-P-S-L-L-P	The ROM checksum is incorrect.	1. Flash the ROM 2. Replace system board.
3	S-S-S-P-L-S-S-P	The CMOS RAM test failed.	Replace system board.
4	S-S-S-P-L-S-L-P	The DMA controller is faulty.	Replace system board.
5	S-S-S-P-L-L-S-P	The interrupt controller failed.	Replace system board.
6	S-S-S-P-L-L-L-P	The keyboard controller failed.	Replace system board.
7	S-S-L-P-S-S-S-P	Graphics adapter is faulty.	Replace system board.
8	S-S-L-P-S-S-L-P	Internal RAM is faulty.	Replace processor board.

S = Short, L = Long, P = Pause

Chapter 2.5 Compaq Diagnostics

A Compaq Diagnostics diskette is supplied with the computer. Run the
Diagnostics utilities when you want to view or test system information and
installed or connected devices. The Diagnostics menu includes the
following utilities:

o Computer Checkup (TEST)

o View System Information (INSPECT)

If you have a problem you cannot solve, run the Diagnostics utilities
before you call for support. Run Computer Checkup and select to save the
device list to a file and to print or to save the log of errors. Run the
View System Information (INSPECT) utility and select to print or to save
that information. Have the files or the printed information available when
you call for support.

2.5.1 Computer Checkup (TEST)

Computer Checkup (TEST) determines whether the various computer components
and devices are recognized by the system and are functioning properly. You
can display, print, or save the information generated by Computer Checkup.

Follow these steps to run Computer Checkup:

 1. Plug the computer into an external power source. (A low battery
    condition could interrupt the program.)

 2. Turn on the external devices that you want to test. Connect the
    printer if you want to print a log of error messages.

 3. Insert the Compaq Diagnostics diskette in drive A.

 4. Turn on or restart the computer. The computer starts from drive A, and
    the Diagnostics Welcome screen appears.

 5. Press Enter to continue. The Diagnostics menu appears.

 6. Select Computer Checkup from the Diagnostics menu. A Test Option menu
    appears.

 7. Select "View the Device List" from the Test Option menu. A list of the
    installed Compaq devices appears.

 8. If the list of installed devices is correct, select OK. The Test
    Option menu appears.

    NOTE: If the list is incorrect, ensure that any new devices are
          installed properly.

9. Select one of the following from the Test Option menu:

      o Quick Check Diagnostics. Runs a quick, general test on each device
        with a minimal number of prompts. If errors occur, they display when
        the testing is complete. You cannot print or save the error
        messages.

      o Automatic Diagnostics. Runs unattended, maximum testing of each
        device with minimal prompts. You can choose how many times to run
        the tests, to stop on errors, or to print or save a log of errors.

      o Prompted Diagnostics. Allows maximum control over testing the
        devices. You can choose attended or unattended testing, decide to
        stop on errors, or choose to print or save a log of errors.

  10. Follow the instructions on the screen as the devices are tested. When
      testing is complete, the Test Option menu appears.

  11. Exit the Test Option menu.

  12. Exit the Diagnostics menu.

  2.5.2 View System Information (INSPECT)

The View System Information (INSPECT) utility provides information about
the computer and installed or connected devices. You can display, print,
or save the information.

Follow these steps to run View System Information (INSPECT) from the
Compaq Diagnostics diskette:

1. Turn on the external devices that you want to test. Connect the printer
   if you want to print the information.

2. Insert the Compaq Diagnostics diskette in drive A.

3. Turn on or restart the computer. The computer starts from drive A, and
   the Diagnostics Welcome screen appears.

4. Press Enter to continue. The Diagnostics menu appears.

5. Select View System Information (INSPECT) from the Diagnostics menu.

6. Select the item you want to view from the following list:

===
System   Memory

ROM   Audio

Keyboard   Operating system

System ports   System files

System storage   Windows files

7. Follow the instructions on the screen to cycle through the screens, to
   return to the list and choose another item, or to print the
   information.

Chapter 2.6 Diagnostic Error Codes

Diagnostic error codes occur if the system recognizes a problem while
running the Compaq Diagnostic program. These error codes help identify
possibly defective subassemblies.

Tables 2-4 through 2-16 list possible error codes, a description of the
error condition, and the action required to resolve the error condition.

IMPORTANT: Retest the system after completing each step. If the problem
           has been resolved, do not proceed with the remaining steps.

For assistance in the removal and replacement of a particular subassembly,
see Chapter 5, "Removal and Replacement Procedures."

Table 2-4. Processor Test Error Codes
==
Error Code	Description	Recommended Action
101 - xx	CPU test failed	Replace the processor board and retest.
102 - xx	Coprocessor or Weitek Error	1. Run the Configuration and Diagnostics Utilities. 2. Replace the processor board and retest.
103 - xx	DMA page registers test failed	Replace the system board and retest.
104 - xx	Interrupt controller master test failed	
105 - xx	Port 61 error	
106 - xx	Keyboard controller self-test failed	
107 - xx	CMOS RAM test failed	
108 - xx	CMOS interrupt test failed	
109 - xx	CMOS clock test failed	

```
110 - xx      Programmable timer
              load data test
              failed

113 - xx      Protected mode test
              failed
-----------------------------------------------------------------------
114 - 01      Speaker test failed    1. Check system configuration.
                                     2. Verify cable connections to speaker.
                                     3. Replace the system board and retest.
=======================================================================

Table 2-5. Memory Test Error Codes
=======================================================================
Error Code    Description            Recommended Action
=======================================================================
200 - xx      Memory machine ID      The following steps apply to error
              test failed            codes 200 - xx and 202 - xx:

202 - xx      Memory system ROM      1. Flash the system ROM and retest.
              checksum failed        2. Replace the system board and retest.
-----------------------------------------------------------------------
203 - xx      Write/Read test        The following steps apply to error
              failed                 codes 203 - xx through 215 - xx:

204 - xx      Address test failed    1. Remove the memory module and retest.
                                     2. Install a new memory module and
211 - xx      Random pattern test       retest.
              failed

214 - xx      Noise test failed

215 - xx      Random address test
              failed
=======================================================================

Table 2-6. Keyboard Test Error Codes
=======================================================================
Error Code    Description            Recommended Action
=======================================================================
300 - xx      Failed ID Test         The following steps apply to error
                                     codes 300 - xx through 304 - xx:

301 - xx      Failed Self-test/      1. Check the keyboard connection. If
              Interface Test            disconnected, turn off the computer
                                        and connect the keyboard.
                                     2. Replace the keyboard and retest.
302 - xx      Failed Individual      3. Replace the system board and retest.
              Key Test

304 - xx      Failed Keyboard
              Repeat Test
=======================================================================

Table 2-7. Parallel Printer Test Error Codes
=======================================================================
Error Code    Description            Recommended Action
=======================================================================
401 - xx      Printer failed or      The following steps apply to error
```

```
                not connected        codes 401 - xx through 403 - xx:

402 - xx     Failed Port Test     1. Connect the printer.
                                   2. Check power to the printer.
403 - xx     Printer pattern test 3. Install the loopback connector and
             failed                   retest.
                                   4. Check port and IRQ configuration.
                                   5. Replace the system board and retest.
=============================================================================

Table 2-8. Diskette Drive Test
=============================================================================
Error Code   Description          Recommended Action
=============================================================================
600 - xx     Diskette ID drive    The following steps apply to error
             types test failed    codes 600 - xx through 698 - xx:

601 - xx     Diskette format      1. Replace the diskette media and
             failed                  retest.
                                   2. Check and/or replace the diskette
602 - xx     Diskette read test      power and signal cables and retest.
             failed               3. Replace the diskette drive and
                                      retest.
603 - xx     Diskette write,      4. Replace the system board and
             read, compare test      retest.
             failed

604 - xx     Diskette random
             read test failed

605 - xx     Diskette ID media
             failed

606 - xx     Diskette speed test
             failed

609 - xx     Diskette reset
             controller test
             failed

610 - xx     Diskette change
             line test failed

697 - xx     Diskette type error

698 - xx     Diskette drive speed
             not within limits
-----------------------------------------------------------------------------
699 - xx     Diskette drive/media 1. Replace media.
             ID error             2. Run the Configuration and
                                      Diagnostics Utilities.
=============================================================================

Table 2-9. Serial Test Error Codes
=============================================================================
Error Code   Description          Recommended Action
=============================================================================
1101 - xx    Serial port test     1. Check port configuration
             failed               2. Replace the system board and retest.
=============================================================================
```

```
Table 2-10. Hard Drive Test Error Codes
=============================================================================
Error Code      Description             Recommended Action
=============================================================================
1701 - xx       Hard drive format       The following steps apply to error
                test failed             codes 1701 - xx through 1736 - xx:

1702 - xx       Hard drive read test    1. Run the Configuration and
                failed                     Diagnostics Utilities and verify
                                           drive type.
                                        2. Verify that all secondary drives
1703 - xx       Hard drive write/          have secondary drive capability
                read/compare test          (see Appendix C).
                failed                  3. Replace the hard drive and retest.
                                        4. Replace the system board and retest.
1704 - xx       Hard drive random
                seek test failed

1705 - xx       Hard drive
                controller test
                failed

1706 - xx       Hard drive ready
                test failed

1707 - xx       Hard drive
                recalibration test
                failed

1708 - xx       Hard drive format
                bad track test
                failed

1709 - xx       Hard drive reset
                controller test
                failed

1710 - xx       Hard drive park
                head test failed

1715 - xx       Hard drive head
                select test failed

1716 - xx       Hard drive
                conditional format
                test failed

1717 - xx       Hard drive ECC *
                test failed

1719 - xx       Hard drive power
                mode test failed

1724 - xx       Network preparation
                test failed

1736 - xx       Drive monitoring
                test failed
-----------------------------------------------------------------------------
```

```
* ECC = Error Correction Code
==============================================================================

Table 2-11. Video Test Error Codes
==============================================================================
Error Code   Description            Recommended Action
==============================================================================
501 - xx     Video controller       The following apply to error codes
             test failed            501 - xx through 516 - xx:

502 - xx     Video memory test      1. Disconnect external monitor and test
             failed                    with internal LCD display.
                                    2. Check display jumpers on the
503 - xx     Video attribute test      processor board (see Chapter 5)
             failed                 3. Replace the display assembly and
                                       retest.
504 - xx     Video character set    4. Replace the system board and retest.
             test failed

505 - xx     Video 80 x 25
             mode 9 x 14
             character cell test
             failed

506 - xx     Video 80 x 25 mode
             8 x 8 character
             cell test failed

507 - xx     Video 40 x 25 mode
             test failed

508 - xx     Video 320 x 200
             mode color set 0
             test failed

509 - xx     Video 320 x 200
             mode color set 1
             test failed

510 - xx     Video 640 x 200
             mode test failed

511 - xx     Video screen memory
             page test failed

512 - xx     Video gray scale
             test failed

514 - xx     Video white screen
             test failed

516 - xx     Video noise pattern
             test failed
------------------------------------------------------------------------------
Error Code   Description            Recommended Action
------------------------------------------------------------------------------
2402 - xx    Video memory test      The following steps apply to error
             failed                 codes 2402 - xx through 2456 - xx:

2403 - xx    Video attribute test   1. Run the Configuration and
```

```
            failed               Diagnostics Utilities.
                                 2. Replace the display assembly and
2404 - xx    Video character set    retest.
             test failed        3. Replace the system board and retest.

2405 - xx    Video 80 x 25 mode
             9 x 14 character
             cell test failed

2406 - xx    Video 80 x 25 mode
             8 x 8 character
             cell test failed

2408 - xx    Video 320 x 200
             mode color set 0
             test failed

2409 - xx    Video 320 x 200
             mode color set 1
             test failed

2410 - xx    Video 640 x 200
             mode test failed

2411 - xx    Video screen
             memory page test
             failed

2412 - xx    Video gray scale
             test failed

2414 - xx    Video white screen
             test failed

2416 - xx    Video noise
             pattern test
             failed

2418 - xx    ECG/VGC memory
             test failed
-----------------------------------------------------------------------
Error Code   Description            Recommended Action
-----------------------------------------------------------------------
2419 - xx    ECG/VGC ROM checksum   The following steps apply to error
             test failed            codes 2402 - xx through 2456 - xx:

2421 - xx    ECG/VGC 640 x 200      1. Run the Configuration and
             graphics mode test        Diagnostics Utilities.
             failed                 2. Disconnect external monitor and
                                       test with internal LCD display.
2422 - xx    ECG/VGC 640 x 350      3. Check display jumpers on the
             16 color set test         processor board (see Chapter 5.)
             failed                 4. Replace the display assembly and
                                       retest.
2423 - xx    ECG/VGC 640 x 350      5. Replace the system board and retest.
             64 color set test
             failed

2424 - xx    ECG/VGC monochrome
             text mode test
```

```
                    failed

2425 - xx      ECG/VGC monochrome
               graphics mode test
               failed

2431 - xx      640 x 480 graphics
               test failure

2432 - xx      320 x 200 graphics
               (256 color mode)
               test failure

2448 - xx      Advanced VGA
               Controller test
               failed

2451 - xx      132-column Advanced
               VGA test failed

2456 - xx      Advanced VGA 256
               Color test failed
-----------------------------------------------------------------------------
2458 - xx      Advanced VGA BitBLT    Replace the system board and retest.
               test

2468 - xx      Advanced VGA DAC
               test

2477 - xx      Advanced VGA data
               path test

2478 - xx      Advanced VGA BitBLT
               test

2480 - xx      Advanced VGA
               Linedraw test
=============================================================================

Table 2-12. Audio Test Error Codes
=============================================================================
Error Code   Description             Recommended Action
=============================================================================
3206 - xx      Audio System          Replace the system board and retest.
               Internal Error
=============================================================================

Table 2-13. Pointing Device Interface Test Error Codes
=============================================================================
Error Code   Description             Recommended Action
=============================================================================
8601 - xx      Mouse test failed     The following steps apply to 8601 - xx
                                     and 8602 - xx:
8602 - xx      Interface test
               failed                1. Replace the EasyPoint II controller
                                        board and retest.
                                     2. Replace the system board and retest.
=============================================================================

Table 2-14. CD-ROM Test Error Codes
```

```
================================================================================
Error Code    Description            Recommended Action
================================================================================
3301 - xx     CD-ROM drive read      The following steps apply to error
              test failed            codes 3301 - xx through 3305 - xx and
                                     6600 - xx through 6623 - xx:

3305 - xx     CD-ROM drive seek      1. Replace the CD and retest.
              test failed            2. Verify that the speakers are
                                        connected.
6600 - xx     ID test failed         3. Verify that drivers are loaded and
                                        properly installed.
6605 - xx     Read test failed       4. Replace the CD-ROM drive and
                                        retest.
6608 - xx     Controller test        5. Replace the system board and
              failed                    retest.

6623 - xx     Random read test
              failed
================================================================================
```

Chapter 2.7 Troubleshooting Without Diagnostics

This section provides information about how to identify and correct some
common hardware, memory, and software problems. It also explains several
types of common messages that may be displayed on the screen. The
following pages contain troubleshooting information on:

o Audio

o Memory

o Battery/battery gauge

o MultiBay ISA Expansion Base

o CD-ROM drive

o PC Card

o Diskette/diskette drive

o Pointing device

o Hard drive

o Power

o Hardware installation

o Printer

o Infrared connection

o Screen (LCD and CRT)

o Keyboard/numeric keypad

2.7.1 Solving Minor Problems

Some minor problems and possible solutions are outlined in the following
tables. If the problem appears related to a software application, check
the documentation provided with the software.

Solving Audio Problems

Some common audio problems and solutions are listed in the following
table.

Table 2-15. Solving Audio Problems
===
Problem   Probable Cause   Solution(s)
===
Computer beeps once   This is typical; it   No action is required.
after you turn it   indicates successful
on.   completion of the Power-On
                        Self-Test (POST).

Computer does not   Speaker volume is off or   If the speaker icon is
beep after the   has been turned down.   not displayed on the
Power-On Self-Test   status panel, Press
(POST).   Fn+F5 to turn the
                                                    speaker on, then adjust
                                                    the volume.

                        Beeps have been turned   Run Computer Setup and
                        off.   turn on beeps.

Loss of audio   Moving hard drives between Download appropriate
                        different LTE 5000 models   driver from Compaq.
===

Solving Battery and Battery Gauge Problems

Some common causes and solutions for battery problems are listed in the
following table. The "Solving Power Problems" section in this chapter also
may be applicable.

Table 2-16. Solving Battery and Battery Gauge Problems
===
Problem   Probable Cause   Solution(s)
===
Computer won't turn   Battery is discharged.   Connect the computer to
on when battery pack   an external power
is inserted and   source and charge the
power cord is   battery pack.
unplugged.
                                                    Replace the battery pack
                                                    with a fully charged
                                                    battery pack.

                                                    Check the battery
                                                    connectors on the system

		board to verify they are evenly spaced and that they are not bent or broken.
Computer is beeping and battery light is blinking.	Battery charge is low.	Immediately save any open file(s). Then do any one of the following: o Connect the computer to an external power source to charge the battery pack. o Initiate Standby and replace the battery pack with a fully charged battery pack. o Turn the computer off or initiate Hibernation until you can find another power source or charge the battery pack.
Computer battery light blinks to indicate low battery condition, but computer does not beep.	Low battery beeps were turned off.	Run Computer Setup to turn on the low battery warning beeps.
	Volume is turned off or turned down too low.	Press Fn+F5 to turn the speaker on and then adjust the volume.
Problem	Probable Cause	Solution(s)
Battery light doesn't light and battery pack won't fast charge.	Battery pack is already charged.	No action is necessary.
	Battery pack was exposed to temperature extremes.	Allow time for the battery pack to return to room temperature.
	Battery pack is at end of its life.	Replace battery pack.
While the computer is in Standby (Suspend), computer turns off	The battery pack was not replaced within 10 minutes. The battery pack must be replaced within 10 minutes to prevent loss of information.	Next time, initiate Standby, then remove the battery pack and replace it within 10 minutes.
	Auxiliary battery charge	Provide power (AC or

	is low, or the auxiliary battery is at end of its life.	battery) to the computer; this charges the auxiliary battery.
		Replace the auxiliary battery.
You have to set the date and time every time you turn on the computer.	Auxiliary battery charge is low, or the auxiliary battery is at end of its life.	Provide power to the computer (AC or battery), which charges the auxiliary battery.
		Replace the auxiliary battery.
Battery charge does not last as long as expected.	Battery is being exposed to high temperatures or extremely cold temperatures.	Keep the battery pack within the recommended operating temperature range 50oF to 104oF (10oC to 40oC) or recommended storage range -4oF to 86oF (-20oC to 30oC). Recharge the battery pack.
	Battery has partially self-discharged.	Recharge the battery. Discharge the battery completely until the unit powers off, and then completely recharge it. Repeat this process every 30 days.
	Power management is disabled.	Set a power management level in Computer Setup.
	An external device or PC Card is draining the battery.	Turn off or disconnect external devices when not using them.
	Extensive modem usage.	Connect to external power source when using CD-ROM extensively.
	Extensive operation in DOS mode (power management is not implemented in DOS mode).	Avoid extensive operation in DOS mode.
Battery pack is warm to the touch after charging.	Normal warming has occurred due to charging.	No action is required.
Battery gauge is inaccurate.	The battery pack is new or has not been used for a long period.	Fully charge the battery pack until the battery light on the computer turns off.
		Condition the battery

```
                                        pack by fully charging,
                                        then fully discharging
                                        until the unit powers
                                        off, and then fully
                                        recharging again.
==========================================================================


Solving CD-ROM Drive Problems

Some common causes and solutions for CD-ROM drive problems are listed in
the following table.


Table 2-17. Solving CD-ROM Drive Problems
==========================================================================
Problem                 Probable Cause              Solution(s)
==========================================================================
CD-ROM drive cannot     Compact disc is upside      Open the CD loading tray,
read a compact disc.    down or is improperly       lay the compact disc in
                        inserted in the CD-ROM      it (label side up), then
                        drive.                      close the tray.
--------------------------------------------------------------------------
CD-ROM drive does       CD-ROM drive is not         Shut down the computer,
not work.               seated properly.            remove and reinsert the
                                                    drive, then turn on the
                                                    computer.

                        CD-ROM drive was            Shut down computer; then
                        inserted while the          turn it on again. The
                        computer was on, in         drive is initialized
                        Standby (Suspend), or       during power up.
                        in Hibernation.
--------------------------------------------------------------------------
No sound comes from     You have two CD-ROM         Shut down the computer
a CD-ROM drive in       drives in the expansion     and remove one of the
the expansion base.     base and are trying to      CD-ROM drives from the
                        play an audio (music)       expansion base. If two
                        CD on one of them.          CD-ROM drives are in the
                                                    expansion base, neither
                                                    can play audio (music)
                                                    CDs.
==========================================================================


Solving Diskette and Diskette Drive Problems

Some common causes and solutions for diskette and diskette drive problems
are listed in the following table.


Table 2-18. Solving Diskette and Diskette Drive Problems
==========================================================================
Problem                 Probable Cause              Solution(s)
==========================================================================
Diskette drive icon     Diskette drive is not       Remove the diskette drive
does not turn on.       installed properly.         and install it properly.
--------------------------------------------------------------------------
Cannot access           Real mode device drivers    Remove the check marks
diskette drive in       have not been loaded.       from the docked and
```

expansion base when running Windows 95.		undocked configurations in Standard Floppy Disk Controller Properties to unload the protected mode drivers and then restart the computer.
Diskette drive icon stays on.	Diskette is damaged.	Run SCANDISK on the diskette. At the system prompt, enter SCANDISK A:
	Diskette is incorrectly inserted.	Remove diskette and reinsert.
	Software program is damaged.	Check the program diskettes.
Diskette drive cannot write to a diskette.	Diskette is write-protected.	Disable the diskette's write-protect feature or use a diskette that is not write-protected.
	Computer is writing to the wrong drive.	Check the drive letter in the path statement.
	Not enough space is left on the diskette.	Use another diskette.
	Drive error has occurred.	Run Computer Checkup from the Compaq Diagnostics diskette.
	Diskette is not formatted.	Format the diskette. At the system prompt, enter FORMAT A:
Diskette drive cannot read a diskette.	The wrong type of diskette is being used.	Use the type of diskette required by the drive.
	Diskette has a bad sector.	Copy files to hard drive or another diskette. Reformat bad floppy.
	Drive error has occurred.	Run Computer Checkup from the Compaq Diagnostics diskette.
	Diskette is not formatted.	Format the diskette. At the system prompt, enter FORMAT A:
Cannot boot from diskette	Bootable diskette is not in drive A	Put the bootable diskette in drive A. If a diskette drive is in the computer MultiBay, that that is drive A.
	Diskette Boot is disabled in Computer	Run Computer Setup and enable Diskette Boot on

```
                         Setup.                      the Initialization menu.
==============================================================================
```

Solving Hard Drive Problems

Some common causes and solutions for hard drive problems are listed in the following table.

```
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> CAUTION <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
```

To prevent loss of information, always maintain an up-to-date backup of your hard drive at all times, in case of errors or failures.

```
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
```

Table 2-19. Solving Hard Drive Problems

Problem	Probable Cause	Solution(s)
Reading hard drive takes an unusually long time after restarting the computer.	System entered Hibernation due to low-battery condition and is now exiting from it.	Give the system time to restore the previously saved data to its exact state before Hibernation.
Hard drive error occurs.	Hard drive has bad sectors or has failed.	Run Computer Checkup from the Compaq Diagnostics diskette. See POST error messages.
Errors occur after booting from an additional hard drive.	Additional hard drive does not have the LTE 5000 software.	Boot from the original LTE 5000 hard drive or a hard drive that has been prepared with the LTE 5000 software.
Computer does not restart after additional hard drive is inserted.	Additional hard drive does not have secondary drive capability	Verify that the additional drive has the secondary-drive icon. See Appendix C.
Hard drive does not work.	Hard drive is not seated properly.	Turn off the computer, remove and reinsert the hard drive, then turn the computer on.
	Hard drive was removed and replaced while computer was on, in Standby, or in Hibernation.	Turn off computer; then turn it on again.
	Hard drive is damaged.	Replace the hard drive.
Hard drive cannot be removed.	Screw has been inserted to secure drive in computer bay.	Remove the screw from the bottom of the computer.

```
                              Hard drive release        Press and hold release
                              button on the bottom of   button while removing
                              the computer has not been hard drive from the bay.
                              pressed.
===============================================================================
```

Solving Hardware Installation Problems

Some common causes and solutions for hardware installation problems are
listed in the following table.

Table 2-20. Solving Hardware Installation Problems

Problem	Probable Cause	Solution(s)
A new device is not recognized as part of the computer system.	Cable(s) of new external device are loose or power cables are unplugged.	Ensure that all cables are properly and securely connected.
	Power switch of new external device is not turned on.	Turn off the computer, turn on the external device, then turn on the computer to integrate the device with the computer system.
	Device is not seated properly.	Turn off the computer and reinsert the device.
	ISA Card switches or jumpers are not set properly or conflict with other devices.	See ISA card documentation.

Solving Infrared Connection Problems

Some common causes and solutions for infrared connection problems are
listed in the following table.

Table 2-21. Solving Infrared Connection Problems

Problem	Probable Cause	Solution(s)
Cannot link with another computer.	Interrupt request (IRQ) conflict.	Check IRQ assignments for conflicts and reassign as necessary.
	Baud rate conflict.	Select the same baud rate for both computers.
Data transmission problem	Direct sunlight, fluorescent light, or flashing incandescent	Remove the interfering light sources.

```
                             light is close to the
                             infrared connections.

                             Interference from other    Keep remote control units
                             wireless devices.           such as wireless
                                                         headphones and other
                                                         audio devices away from
                                                         the infrared connections

                             Physical obstruction.       Do not place objects
                                                         between the two units
                                                         that will interfere with
                                                         a line-of-sight data
                                                         transmission.

                             Movement.                   Do not move either unit
                                                         during data transmission.

                             Orientation.                Adjust devices so that
                                                         they point within 30
                                                         degrees of each other.

                             Distance.                   Verify that devices are
                                                         not more than 3 feet
                                                         (1 m) apart.
===============================================================================
```

Solving Keyboard/Numeric Keypad Problems

Some common causes and solutions for keyboard/numeric keypad problems are
listed in the following table.

Table 2-22. Solving Keyboard/Numeric Keypad Problems

Problem	Probable Cause	Solution(s)
Embedded numeric keypad on computer keyboard is disabled.	Num Lock function is not enabled.	Press the Fn+NumLk keys to enable the Num Lock function and embedded numeric keypad. The Num Lock icon on the status panel turns on.
Embedded numeric keypad is disabled and Num Lock function is on.	External numeric keypad is connected to the computer.	Disconnect the external numeric keypad from the computer.
Keyboard is locked.	You initiated QuickLock.	Enter your password to exit QuickLock.

Solving Memory Problems

Some common causes and solutions for memory problems are listed in the
following table.

Table 2-23. Solving Memory Problems
```
===============================================================================
Problem                  Probable Cause           Solution(s)
===============================================================================
Memory count during      Optional memory          Ensure that the optional
Power-On Self-Test       expansion card is        memory expansion card is
(POST) is incorrect.     installed incorrectly,   installed correctly.
                         is incompatible with the
                         computer, or is
                         defective.
-------------------------------------------------------------------------------
"Out of Memory"          System ran out of memory  Check the application
message is displayed     for the application.      documentation for
on the screen or                                   memory requirements.
insufficient memory                                Install additional
error occurs during                                memory.
operation.

                         Memory is not configured  Reconfigure the memory
                         correctly.                using MS-DOS MemMaker.
                                                   (See MS-DOS Help.)

                         Too many TSR (terminate    Remove from memory any
                         and stay resident)         TSR applications that
                         applications are           you do not need.
                         running.
===============================================================================
```

Solving MultiBay ISA Expansion Base Problems

Some common MultiBay ISA Expansion Base causes and solutions are listed in
the following table.

Table 2-24. Solving MultiBay ISA Expansion Base Problems
```
===============================================================================
Problem                  Probable Cause           Solution(s)
===============================================================================
No external video        The ISA slot does not    Plug the external
using an ISA graphics     support graphics         monitor directly into
controller card in        controller cards.        the MultiBay ISA
the MultiBay ISA                                   Expansion Base.
Expansion Base.
-------------------------------------------------------------------------------
ISA slot not             The ROM version in the    Using the ROM by
recognized by the        computer may be below     downloading the current
LTE 5000 in the          revision 4.02 (6/13/96)   ROMPaq diskette.
MultiBay ISA
Expansion Base.
===============================================================================
```

Solving PC Card Problems

Some common causes and solutions for PC Card problems are listed in the
following table.

Table 2-25. Solving PC Card Problems
===
| Problem | Probable Cause | Solution(s) |

===

Problem	Probable Cause	Solution(s)
PC Card error messages appear when the computer is turned on.	The PC Card slot is disabled.	Run Computer Setup and enable the PC Card slots on the Security Menu.
When turned on, the computer does not beep when a PC Card is inserted.	Card is not inserted properly.	Ensure the card is inserted in the correct orientation.
	PC Card beeps are disabled.	Double-click the PC Card icon in the Control Panel, click the Global Settings tab, the enable PC Card sound effects.
	Speaker is turned off or volume is turned down.	Press Fn+F5 to turn the speaker on, then increase the volume.
	PC Card drivers are not installed.	Double click the Add New Hardware icon in the Control Panel for installation instructions.
		If PC Card or drivers are not compatible with Windows 95, install drivers and use the PC Card in MS-DOS mode.
	The PC Card slots are disabled.	Run Computer Setup and then select the Security menu to enable PC Card slots.
	Card or card driver is not supported.	Contact your Compaq authorized service provider for a list of PC Cards tested successfully in Compaq PC Card platforms.
The PC Card drivers (Socket Services, Card Services, Card ID) fail with error messages when the computer is turned on.	The PC Card slot is disabled.	Run Computer Setup and select the Security menu to enable PC Card slots.
PC Card modem, fax, or network card does not work.	Card is not fully inserted into the slot or is not inserted properly.	Ensure the card is inserted in the correct orientation.

	Telephone cord is not plugged in all the way.	Check and secure telephone connection.
	Necessary drivers are not installed (turned on).	Install drivers.
PC Card modem or fax card does not work.	You are trying to access the card using the wrong COM port.	See Chapter 8 to verify COM port.
	The card conflicts with a serial device.	See Chapter 8 to verify address.
	The card is not supported.	Use supported cards only.
Modem network PC Card does not work.	Network driver is not installed or is not set up properly.	Install driver.
	Telephone cord is not properly connected.	Verify telephone connection.
Memory or storage card does not work.	SRAM and flash memory cards require the memory card driver to be loaded (turned on).	Install driver.
	Flash memory cards require the Microsoft FlashFile System to be loaded.	
	Hard drives on flash mass storage cards require the PC Card ATA driver to be loaded.	
	You are trying to access the hard drive card using the wrong drive letter.	Double-click My Computer to verify the drive letter assigned to the card.
	The card is not supported.	Contact your Compaq authorized service provider for a list of PC Card cards tested successfully in Compaq PC Card platforms.

Solving Pointing Device Problems

Some common causes and solutions for EasyPoint II pointing device problems are listed in the following table.

Table 2-26. Solving Pointing Device Problems
===
Problem   Probable Cause   Solution(s)
===
External pointing   Incorrect device driver Install the device driver
device does not   or no device driver is   and add to the
work.   installed.   AUTOEXEC.BAT file or
                                                CONFIG.SYS file.

                       The device driver is not Install the device driver
                       installed in Windows.   in Windows.

Integrated pointing   An external pointing   Initiate Standby and
device does not   device is connected   disconnect the external
work.   and the system has   pointing device.
                       disabled the internal
                       pointing device.

Cursor drifts during   The panastick   If the cursor starts
changes in operating   technology can sometimes drifting, stop using it
temperatures or if   exhibit this behavior.   for a few seconds. This
constant pressure   will stop the cursor
is applied to the   drift, and allow you to
internal pointing   resume normal operation.
device.
===

Solving Power Problems

Some common causes and solutions for power problems are listed in the
following table. Also see "Solving Battery and Battery Gauge Problems" in
this chapter.

Table 2-27. Solving Power Problems
===
Problem   Probable Cause   Solution(s)
===
Computer won't turn   Computer is not   Insert battery or connect
on and battery pack   connected to a power   an external power source.
is not inserted.   source.

                       Power cords to the   Ensure that power cords
                       external power source   connecting the computer
                       are unplugged.   and the external power
                                                source are plugged in
                                                properly.

                       Power board is   1. See Table 2-27 and
                       defective.   Figure 2-2 to check
                                                   for proper voltages.

                                                2. Replace power board
                                                   and restart.

Computer turned off   System initiated   Replace the battery pack
while it was left   Hibernation due to a   with a fully charged
unattended and the   critical low-battery   battery pack or connect
power icon is off.   condition.   the computer to an

		external power source. Then turn on the computer.
	System initiated Hibernation after a preset timeout.	Turn on the computer.

Computer initiated Standby automatically or turned off automatically when it was docked in expansion base.	The unit temperature was exceeded. NOTE: The fan turns on and off automatically when the computer reaches certain temperatures. This is normal.	Computer is in an exceedingly hot environment. Let the computer cool down.
	Fan may be blocked, causing temperature to exceed limits.	Make sure airflow vents are not obstructed. If problem persists, contact your Compaq authorized service provider.

===
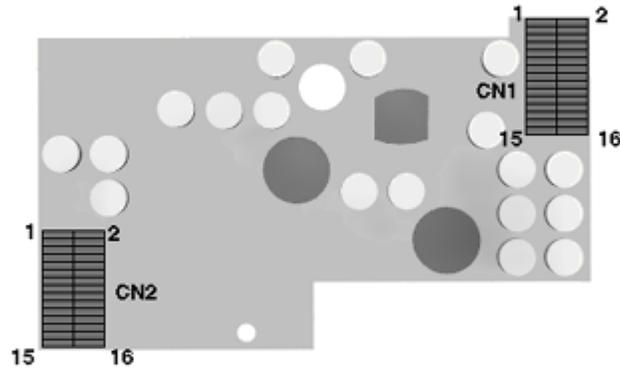
Figure 2-2. Power Board Signals

Table 2-28. Power Board Signals
```
============================================================================
Connector    Pins                  Signal
============================================================================
CN1          1, 2, 3, 4            3.3 Volt output

             5                     Enable 3.3 Volt output when high

             6, 7, 8, 9, 10, 11    GND

             12                    Enable 5 Volt output when high

             13                    +15 Volt output

             14, 15, 16            5 Volt output
----------------------------------------------------------------------------
CN2          1, 2, 3, 4            18 Volt input from AC Adapter

             5, 6, 7, 8, 9, 10     GND

             11, 12, 13, 14        11 - 17 Volt battery input

             15                    Standby (low when computer is in standby)

             16                    Not used
============================================================================
```

Solving Printer Problems

If you experience problems printing, run a printer self-test. Refer to the
documentation provided with your printer for instructions. If the
self-test fails, it is a printer-specific problem. Also refer to the
printing section of your application documentation.

Table 2-29. Solving Printer Problems
```
============================================================================
Problem            Probable Cause        Solution(s)
============================================================================
Printer will not   The signal cable may not   Ensure that the signal
turn on.           be connected properly,     cable is properly
                   or the printer is          connected and that the
                   unplugged.                 power cord is connected
                                              to the electrical outlet.
----------------------------------------------------------------------------
Printer will not   Printer is not turned on   Turn the printer on and
print.             or is off line.            set it to on line.

                   The device drivers for     Refer to the printer
                   your application are not   documentation to Install
                   installed.                 the correct printer
                                              driver.

                   Printer that is set up     Connect the printer to
                   for a network is not       the network.
                   connected to the
                   network.

                   Printer cable is too       Replace the cable.
```

```
                        long, unshielded, or
                        defective.

                        Paper tray is empty.     Fill the paper tray with
                                                 paper and set the
                                                 printer to on line.
-----------------------------------------------------------------------
Printer prints          Correct printer drivers  Refer to the printer
garbled                 are not installed.       documentation to Install
information.                                      the correct printer
                                                 driver.

                        Cable is not connected   Ensure that the printer
                        properly.                signal cable is properly
                                                 connected to the
                                                 computer.

                        Cable is defective.      Replace the printer
                                                 cable and retest.
=======================================================================
```

Solving Screen Problems

This section lists some common causes and solutions for computer display
and external monitor problems.

IMPORTANT: Verify that the display jumpers on the processor board are set
           properly for the display before proceeding with any
           troubleshooting.

You can perform a monitor self-test on an external VGA color or monochrome
monitor by disconnecting the monitor from the computer. To do so, complete
the following steps:

1. Turn off the monitor.

2. Turn off the computer.

3. Disconnect the monitor signal cable from the computer.

4. Turn on the monitor and allow it to warm up for one minute.

   The screen should be white. A narrow black border may also appear on
   the left and right sides of the display. Either of these displays
   indicates that the monitor is working properly.

Table 2-30. Solving Screen Problems
```
=======================================================================
Problem                 Probable Cause           Solution(s)
=======================================================================
Characters are dim.     The brightness or        Adjust the control(s) on
                        contrast (if applicable) the right side of the
                        control is not set       computer display.
                        properly.

                        Computer screen is in    Tilt the display or move
```

	direct light.	computer.
Screen is blank.	You initiated QuickLock/ QuickBlank.	Enter your password to exit QuickLock/ QuickBlank.
	You may have another screen blanking utility installed.	Press any key and/or enter your password.
	Screen save was initiated after the Power Management timeout period of inactivity	Press any key or click the mouse.
	If an STN screen is used, brightness/ contrast needs adjusting.	Use the control on the display to adjust the brightness/contrast.
	Standby was initiated.	Press the standby button to exit Standby.
	Display switch is stuck.	Tap the switch.
Computer screen is blank and the screen on an external monitor displays information.	Display was switched to the external monitor.	Press the Fn+F4 hotkey to display information on the computer screen.
Distorted or garbled characters on the screen are mixed with text.	The ANSI.SYS driver is not in the CONFIG.SYS file or the path is incorrect.	Add the ANSI.SYS driver to the CONFIG.SYS file. Add the following line: DEVICE=C:\ANSI.SYS
Garbled characters on internal display or flashing internal display when connected to external monitor.	You are using 800 x 600 or higher resolution on external display and have toggled back to internal display, which only supports 640 x 480 resolution.	Restart your computer. If simultaneous display is desired, use 640 x 480 resolution.
The image on the external monitor does not fill the screen.	You are using an external monitor and simultaneously displaying an image on the computer display.	This is typical; no action is required.
Small red, green, or blue spots appear on the computer TFT display.	Small spots, called on-pixels, often appear on TFT screens. Compaq limits the number of these on-pixels to 0.003 percent of the approximately 1 million transistors that are on a 10.4-inch display.	This is typical; no action is required.

| When in MS-DOS mode, the image on the computer display does not fill the screen. | To maintain a high-quality image, the 800 x 600 models do not stretch the lower-resolution image of MS-DOS mode to fill the screen. This is inherent to display panel technology under a DOS environment. | Try FN + T to stretch the screen in DOS mode. If this doesn't work, download the latest ROM and video drivers from Compaq. |

===

Chapter 3. Illustrated Parts Catalog

Chapter 3.0 Introduction

This chapter provides an illustrated parts breakdown and a reference for
spare part numbers for the Compaq LTE 5000 Family of Personal Computers,
MultiBay Expansion Base, and MultiBay ISA Expansion Base.

Chapter 3.1 Computer System Major Components
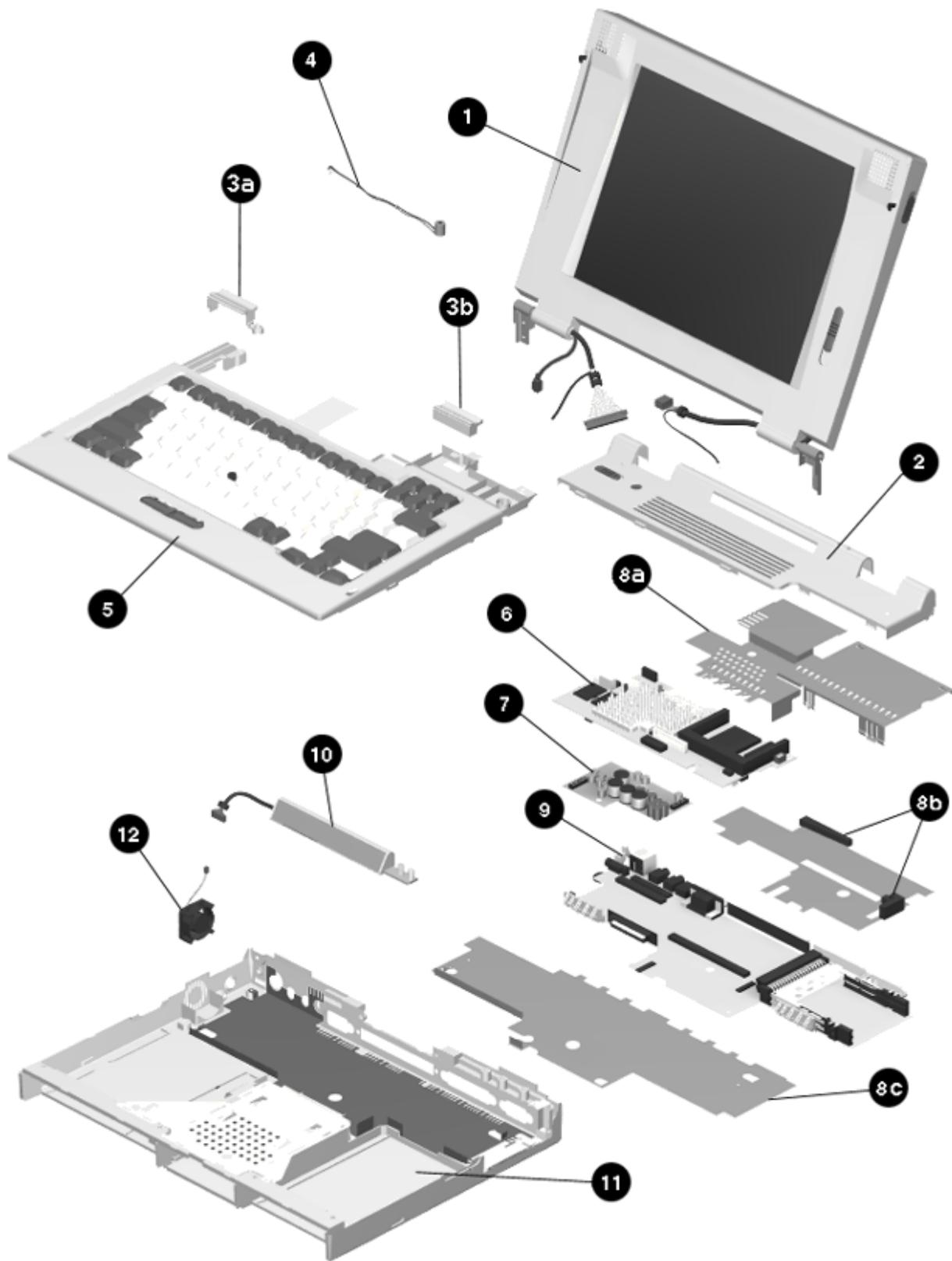
Figure 3-1. Computer System Major Components

```
Table 3-1. Spare Parts - Computer System Major Components
===============================================================================
Item   Description                              Spare Part Number
===============================================================================
  1    Display assembly, VGA, CTFT, 10.4-inch
       (26.4 cm). Use with Model LTE 5000 VGA
       (NOTE 1)                                 213547-001
-------------------------------------------------------------------------------
  1    Display assembly, VGA, CSTN, 10.4-inch
       (26.4 cm). Use with Model LTE 5000 VGA
       (NOTE 1)                                 213646-001
-------------------------------------------------------------------------------
  1    Display assembly, SVGA, CSTN, 11.3-inch
       (28.7 cm). Use with Model LTE 5000 SVGA
       (NOTE 1)                                 213549-001
-------------------------------------------------------------------------------
  1    Display assembly, SVGA, CTFT, 10.4-inch
       (26.4 cm). Use with Model LTE 5100 SVGA  213548-001 (NOTE 3)
       (NOTE 1)                                 224149-001 (NOTE 3)
-------------------------------------------------------------------------------
  1    Display assembly, SVGA, CTFT, 10.4-inch
       (26.4 cm). Use with Models LTE 5200      213548-001 (NOTE 3)
       SVGA (NOTE 1)                            224149-001 (NOTE 3)
-------------------------------------------------------------------------------
  1    Display assembly, SVGA, CTFT, 11.3-inch
       (28.7 cm). Use with Models LTE 5280
       SVGA (NOTE 1)                            224140-001
-------------------------------------------------------------------------------
  1    Display assembly, SVGA, CTFT, 12.1-inch
       (30.7 cm). Use with Models LTE 5300
       SVGA (NOTE 1)  and LTE 5400.             224139-001
-------------------------------------------------------------------------------
  1    Display assembly, SVGA, CSTN, 11.3-inch
       (28.7 cm). Use with Models LTE 5150 SVGA
       (NOTE 1)                                 224141-001
-------------------------------------------------------------------------------
  1    Display assembly, SVGA, CTFT, 10.4-inch
       (26.4 cm). Use with Models LTE 5250 SVGA
       (NOTE 1)                                 242117-001
-------------------------------------------------------------------------------
  1    Display assembly, 1024 x 768, CTFT,
       12.1-inch (30.7 cm). Use with Models
       LTE 5380 (NOTE 1)                        242116-001
-------------------------------------------------------------------------------
  2    CPU cover, U.S. (all other models)
       (includes switch actuators and warning
       labels)                                  241968-001
-------------------------------------------------------------------------------
  2    CPU cover, other than U.S. (includes
       switch actuators and caution labels)     213543-031
-------------------------------------------------------------------------------
  3    Clutch Cradle (Included in Doors &
       Miscellaneous Plastic Kit)               See Section 3.6
       a. Left clutch cradle
       b. Right clutch cradle
===============================================================================
Item   Description                              Spare Part Number
===============================================================================
  4    Microphone (includes microphone boot &   213626-X01 (NOTE 4)
       extension cable)
-------------------------------------------------------------------------------
  5    Keyboard assembly, Belgium (NOTE 2)      213533-X18 (NOTE 4)
-------------------------------------------------------------------------------
```

Item	Description	Spare Part Number
5	Keyboard assembly, Danish (NOTE 2)	213533-X08 (NOTE 4)
5	Keyboard assembly, French (NOTE 2)	213533-X05 (NOTE 4)
5	Keyboard assembly, French Canadian (NOTE 2)	213533-X12 (NOTE 4)
5	Keyboard assembly, German (NOTE 2)	213533-X04 (NOTE 4)
5	Keyboard assembly, Italian (NOTE 2)	213533-X06 (NOTE 4)
5	Keyboard assembly, Japanese (NOTE 2)	213533-X19 (NOTE 4)
5	Keyboard assembly, Latin American (NOTE 2)	213533-X16 (NOTE 4)
5	Keyboard assembly, Norwegian (NOTE 2)	213533-X09 (NOTE 4)
5	Keyboard assembly, Portuguese (NOTE 2)	213533-X13 (NOTE 4)
5	Keyboard assembly, Spanish (NOTE 2)	213533-X07 (NOTE 4)
5	Keyboard assembly, Swedish/Finnish (NOTE 2)	213533-X10 (NOTE 4)
5	Keyboard assembly, Swiss (NOTE 2)	213533-X11 (NOTE 4)
5	Keyboard assembly, U.K. (NOTE 2)	213533-X03 (NOTE 4)
5	Keyboard assembly, U.S. (NOTE 2)	213533-X01 (NOTE 4)
6	LTE 5000 75 Mhz Processor Board	213556-001
6	LTE 5100 90 MHz Processor Board	213557-001
6	LTE 5150 100 MHz Processor Board	224136-001
6	LTE 5200 120 MHz Processor Board	213628-001
6	LTE 5250 120 MHz Processor Board	224137-001
6	LTE 5280 120 MHz Processor Board	224137-001
6	LTE 5300 133 MHz Processor Board	224138-001

Item	Description	Spare Part Number
6	LTE 5380 133 MHz Processor Board	224138-002
6	LTE 5400 150 MHz Processor Board	242166-001
7	Power board, DC/DC	213562-001
8	Shields and Insulators Kit a. EMI shield b. Power board insulator (75 MHz) c. Power board insulator (90 MHz/not shown) c. System board insulator. IrDA shield (not shown)	213672-001

```
---------------------------------------------------------------------------
 9      LTE 5000, 5100 75 Mhz, 90 Mhz and 5200
        120 MHz System Board                       213546-001
---------------------------------------------------------------------------
 9      LTE 5150 100 Mhz, 5250, 5280 120 Mhz,
        5300 133 MHz and 5400 150 MHz System
        Board                                      224135-001
---------------------------------------------------------------------------
 9      LTE 5380 133 MHz System Board              242115-001
---------------------------------------------------------------------------
10      Status panel assembly (for models 5000,
        5100, and 5200)                            213534-001
---------------------------------------------------------------------------
10      Status panel assembly (for all other
        models)                                    241968-001
---------------------------------------------------------------------------
11      Base assembly (See Section 3.3 for
        components)                                213542-001
---------------------------------------------------------------------------
12      Fan (includes cushions) (all models)       242185-001
---------------------------------------------------------------------------
NOTE 1: Includes cables, clutch assemblies, and logos.

     2: Includes keyboard w/integrated EasyPoint II pointing device,
        microphone, and eject mechanisms.

     3: LTE 5100 and LTE 5200 units that shipped with the original
        display(serial number lower than J605xxxxxxxx) are supported by
        Spare Part Number 213548-001. LTE 5100 and LTE 5200 units that
        shipped with the enhanced display (serial number J605xxxxxxxx or
        higher) are supported by Spare Part Number 224149-001. (Refer to
        Service Advisory 973 for more information)

     4: Replace X in part number with 1 for keyboard with normal pointing
        device cap, or 2 for keyboard with enhanced "fuzzy" pointing
        device cap.
===========================================================================
```

Chapter 3.2 Display Assembly Components
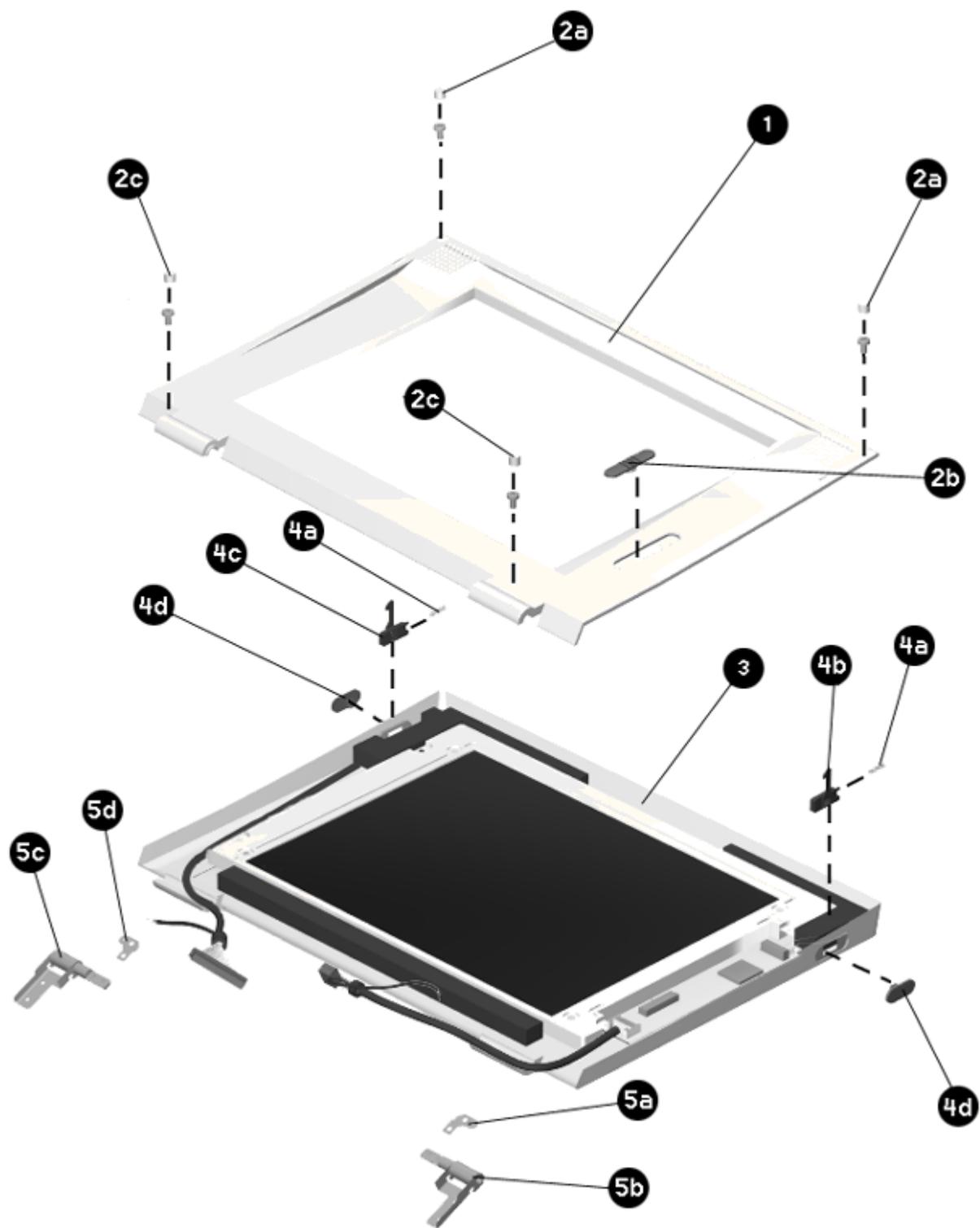
Figure 3-2. Display Assembly Components

```
Table 3-2. Spare Parts - Display Assembly Components
===============================================================================
Item        Description                               Spare Part Number
===============================================================================
1           Bezel with speakers, for 10.4-inch
            (26.4 cm) CSTN display                    213647-001
-------------------------------------------------------------------------------
1           Bezel with speakers, for 11.3-inch
            (28.7 cm) CSTN display                    213609-001
-------------------------------------------------------------------------------
1           Bezel with speakers, for 11.3-inch
            (28.7 cm ) CTFT display                   224167-001
-------------------------------------------------------------------------------
            Bezel with speakers, for 12.1-inch
            (30.7 cm ) CTFT display                   224157-001
-------------------------------------------------------------------------------
1           Bezel with speakers, for 10.4-inch
            (26.4 cm) CTFT display                    213540-001
-------------------------------------------------------------------------------
1           Bezel with speakers, for 10.4-inch
            (26.4 cm ) enhanced CSTN display          213647-002
-------------------------------------------------------------------------------
2           Doors and Miscellaneous Plastics Kit      See Section 3.6
            (SPS number 213567-001) components:
            a. Bezel screw cover (Quantity = 2)
            b. Brightness/Contrast control actuator
               (Quantity = 2)
            c. Clutch screw cover (Quantity = 2)
-------------------------------------------------------------------------------
3           Display panel and cover (Shown for        See Section 3.1
            reference; available only as part of
            Display Assembly)
-------------------------------------------------------------------------------
4           Latches Kit (SPS number 213568-001)       See Section 3.5
            components:
            a. Latch spring (Quantity = 2)
            b. Latch (right)
            c. Latch (left)
            d. Latch actuator (Quantity = 2)
-------------------------------------------------------------------------------
5           Clutch Kit. Contains the following:       213541-001
            a. Clutch bracket, right
            b. Clutch, right
            c. Clutch, left
            d. Clutch bracket, left
===============================================================================
```

Chapter 3.3 Computer Base Assembly Components
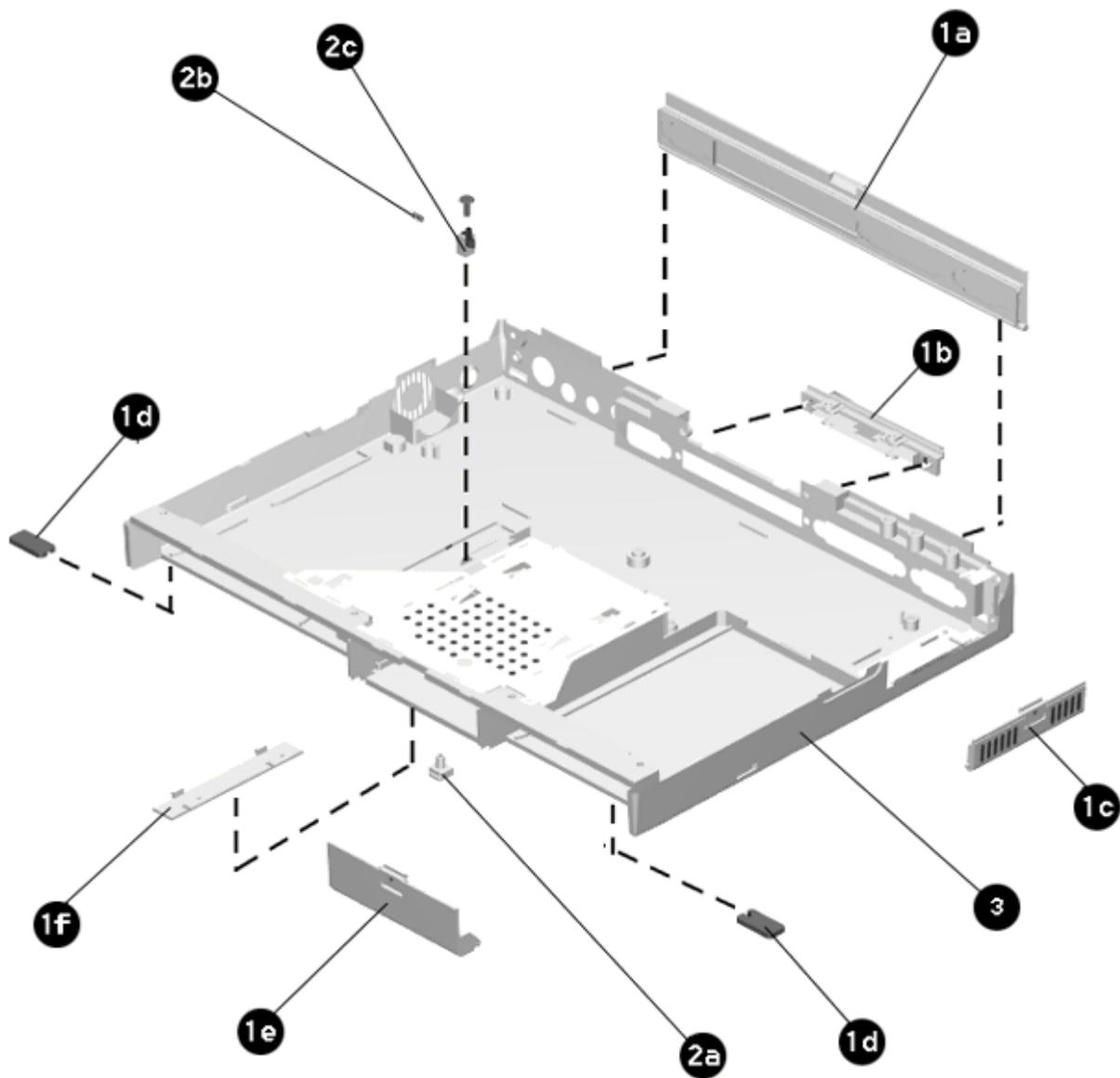
Figure 3-3. Computer Base Assembly Components

```
Table 3-3. Spare Parts - Computer Base Assembly Components
===========================================================================
Item        Description                             Spare Part Number
===========================================================================
1           Doors and Miscellaneous Plastic Kit     See Section 3.6
            (SPS number 213567-001) components:
            a. Connector cover
            b. Memory slot panel with handle
            c. PC Card door
            d. Foot (Quantity = 10)
            e. Hard drive door
            f. Auxiliary battery door
---------------------------------------------------------------------------
2           Latches Kit (SPS number 213568-001)     See Section 3.5
            components:
            a. Hard drive release
            b. Hard drive release spring
            c. Hard drive latch
---------------------------------------------------------------------------
3           Base (available only as part of base    See Section 3.1
            assembly)
===========================================================================
```

Chapter 3.4 Keyboard Assembly Components
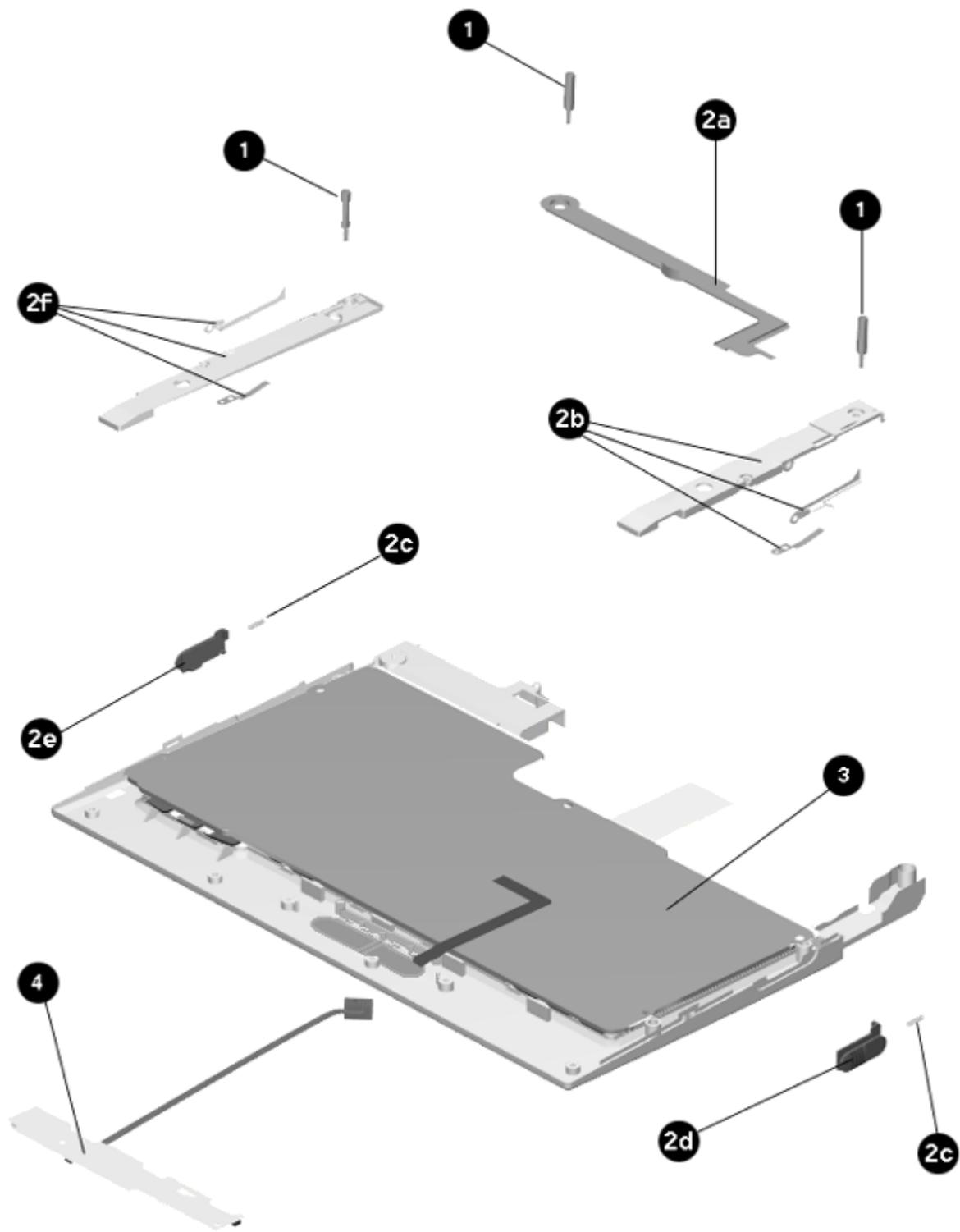
Figure 3-4. Keyboard Assembly Components

```
Table 3-4. Spare Parts - Keyboard Assembly Components
===========================================================================
Item        Description                              Spare Part Number
===========================================================================
1           Standoff (Quantity = 5). Included in     See Section 3.10
            Miscellaneous Screws Kit (SPS number
            213545-001).
---------------------------------------------------------------------------
2           Latches Kit (SPS number 213568-001)      See Section 3.5
            components:
            a. CD-ROM release bar
            b. MultiBay release holder assembly
               (includes release hook and leaf
               spring)
            c. Release spring (Quantity = 2)
            d. MultiBay device release actuator
            e. Battery release actuator
            f. Battery release holder assembly
               (includes release hook and leaf
               spring)
---------------------------------------------------------------------------
3           Keyboard base (available only as part of  See Section 3.1
            keyboard assembly)
---------------------------------------------------------------------------
4           EasyPoint II controller (includes
            insulator)                               213538-001
===========================================================================
```

Chapter 3.5 Latches Kit Components
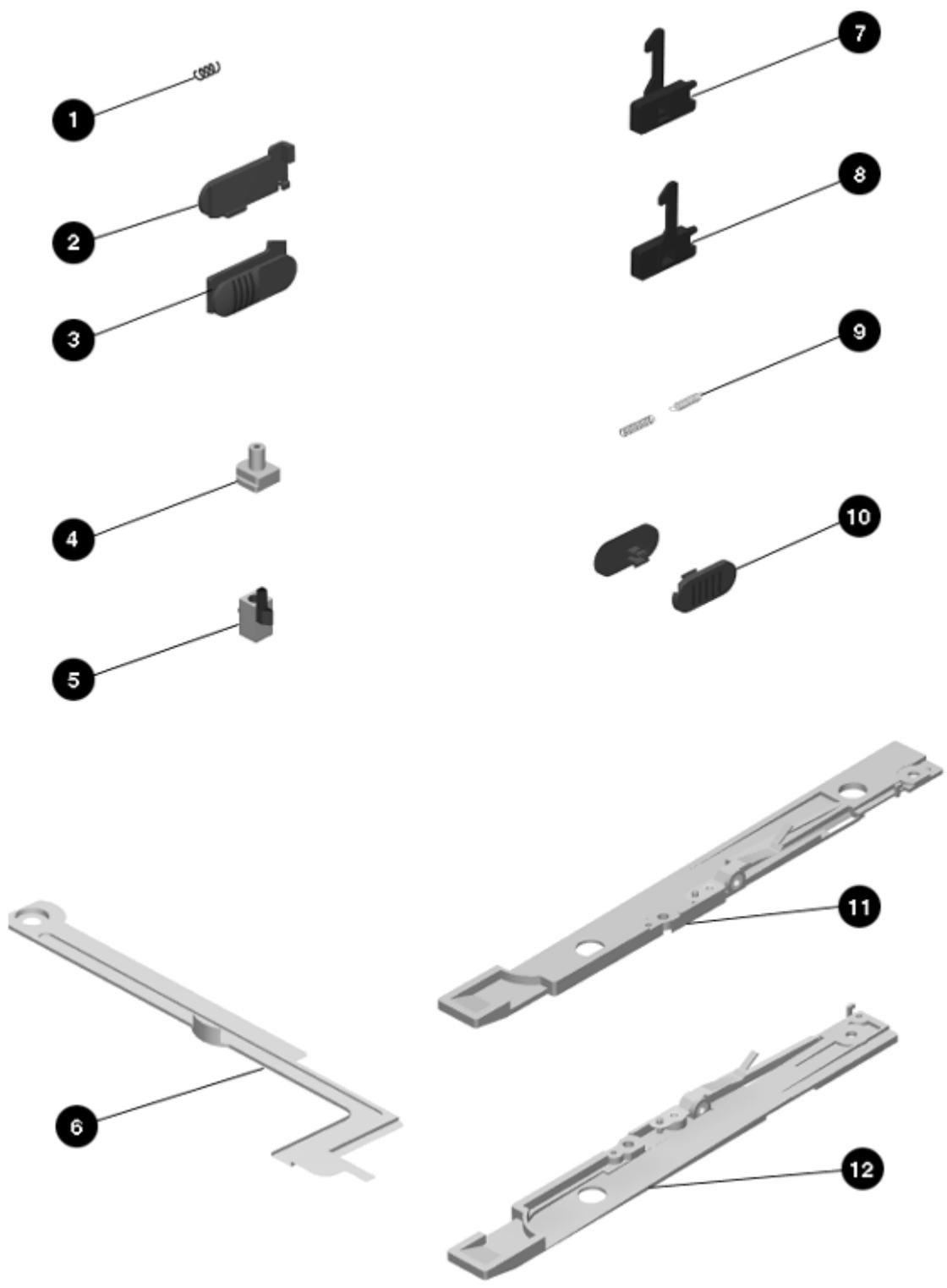
Figure 3-5. Latches Kit Components

```
Table 3-5. Spare Parts - Latches Kit
==========================================================================
Description                                           Spare Part Number
==========================================================================
Latches Kit. Contains the following:                  213568-001


 1. Hard drive release spring

 2. Battery release actuator

 3. MultiBay device release actuator

 4. Hard drive release button

 5. Hard drive latch

 6. CD-ROM release bar

 7. Latch hook, left

 8. Latch hook, right

 9. Latch spring (Quantity = 2)


10. Latch actuator (Quantity = 2)

11. Battery release holder assembly
    (includes release hook & leaf spring)

12. MultiBay release holder assembly
    (includes release hook & leaf spring)

13. Battery/MultiBay release actuator spring
    (Quantity = 2 /not shown)
==========================================================================
```

Chapter 3.6 Doors and Miscellaneous Plastics Kit
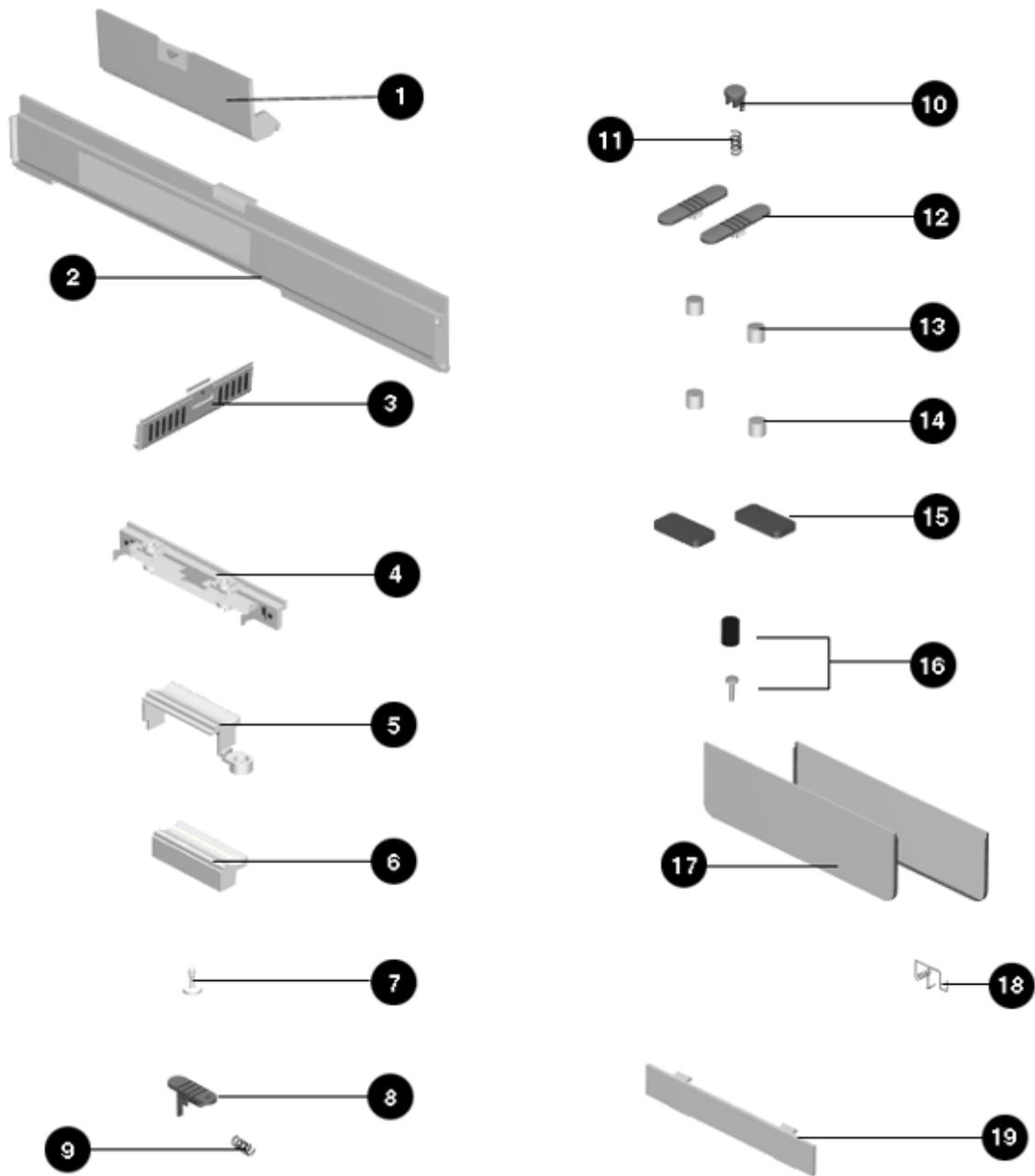
Figure 3-6. Doors and Miscellaneous Plastics Kit

```
Table 3-6. Spare Parts - Doors and Miscellaneous Plastics Kit
==============================================================================
Description                                         Spare Part Number
==============================================================================
Doors and Miscellaneous Plastics Kit.               213567-001
Contains the following:


 1. Hard drive door

 2. Connector cover

 3. PC Card door

 4. Memory slot panel with handle

 5. Clutch cradle (left)

 6. Clutch cradle (right)

 7. Display switch button

 8. Power switch actuator

 9. Power switch actuator spring


10. Standby switch button

11. Standby switch button spring

12. Brightness/Contrast control
    actuator (Quantity = 2)

13. Bezel screw plug (Quantity = 10)

14. Clutch screw plug (Quantity = 10)

15. Foot (Quantity = 10)

16. Pointing device rubber cap with plunger
    (Quantity = 3)

17. Battery charger door (Quantity = 2)

18. Battery charger door spring
    (Quantity = 2)

19. Auxiliary battery door
==============================================================================
```

Chapter 3.7 Computer Optional Components
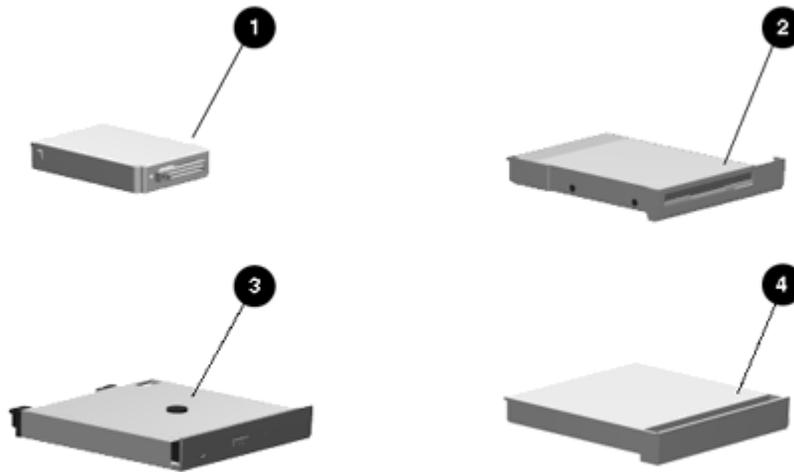
Figure 3-7. Computer Optional Components

```
Table 3-7. Spare Parts - Computer Optional Components
=============================================================================
Item        Description                              Spare Part Number
=============================================================================
1           510 MB hard drive                        213558-001

1           810 MB hard drive                        213559-001

1           1.35 GB hard drive                       213722-001

1           2.16 GB hard drive without DFP           242114-001

1           2.16 GB hard drive with DFP              242169-001

2           Diskette drive, 3-mode,
            3.5-inch                                 213560-001

3           6x CD-ROM drive                          242113-001

3           Quad speed CD-ROM Drive                  224130-001

3           Dual speed CD-ROM Drive                  213561-002

4           MultiBay Weight Saver                    213636-001
=============================================================================
```

Chapter 3.8 Computer Standard Accessories
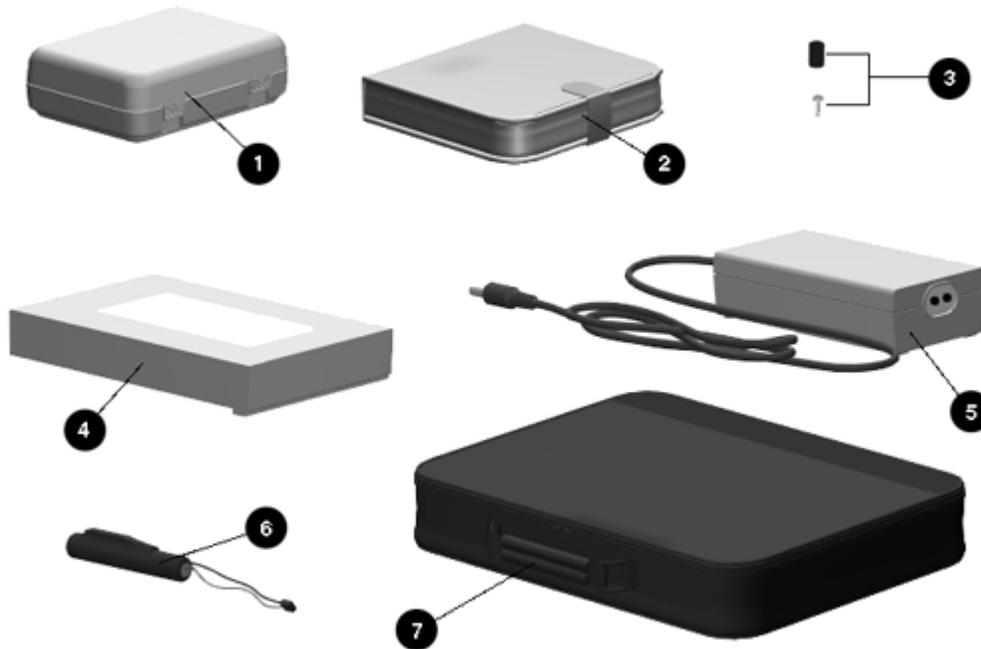
Figure 3-8. Computer Standard Accessories

```
Table 3-8. Spare Parts - Computer Standard Accessories
===============================================================================
Item        Description                                     Spare Part Number
===============================================================================
1           Hard drive carrying case                        149783-001

2           MultiBay device carrying case                   213611-001

3           EasyPoint II pointing device
            cap (Quantity = 12)                             213621-001

4           Battery pack, NiMH (Models 5000, 5100, and      213564-001
            5200)

4           Battery pack, NiMH (Models 5280, and 5300)      213564-002

4           Battery pack, NiMH (Models 5150, 5250,
            5380, and 5400)                                 213564-002

5           AC adapter                                      213563-001

6           Auxiliary battery                               213532-001

7           Slipcase                                        213616-001
```

```
8          AC power cord, Australia (not shown)           149710-008

8          AC power cord, Europe (not shown)              149710-002

8          AC power cord, Japan (not shown)               149710-007

8          AC power cord, UK (not shown)                  149710-003

8          AC power cord, US (not shown)                  149710-001
==============================================================================
```

Chapter 3.9 Computer Optional Accessories
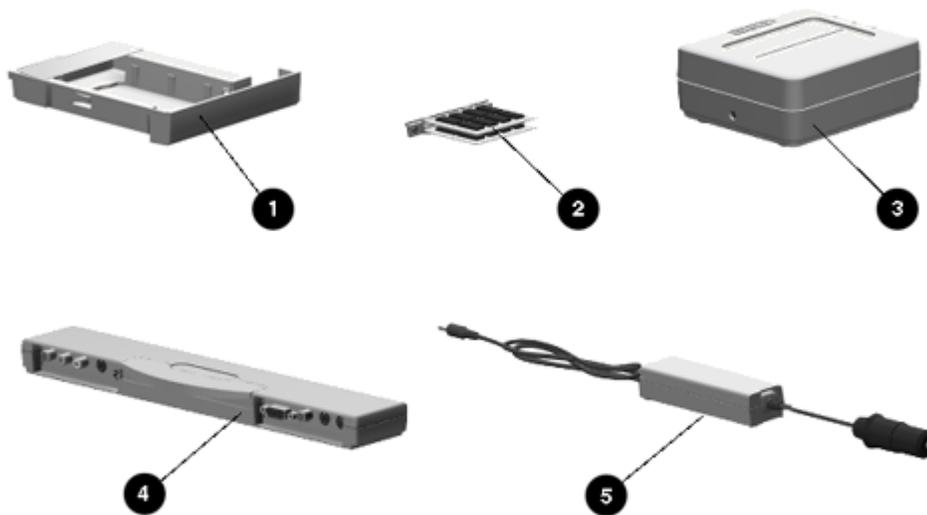
Figure 3-9. Computer Optional Accessories

```
Table 3-9. Spare Parts - Computer Optional Accessories
==============================================================================
Item      Description                                    Spare Part Number
==============================================================================
1         Hard drive carrier                             213610-001

2         Memory expansion board, 8 MB                   213536-001

2         Memory expansion board, 16 MB                  213536-002

2         Memory expansion board, 32 MB                  213536-003
```

```
2          Memory expansion board, 64 MB                 213536-004

3          Battery Fastcharger                           213614-001

4          MPEG and TV Video Adapter                     213537-001

5          Automobile Adapter                            194626-001

6          MPEG AC Adapter (not shown)                   241909-001
==============================================================================
```

Chapter 3.10 Computer Miscellaneous Spare Parts

```
Table 3-10. Computer Miscellaneous Spare Parts
==============================================================================
Item       Description                              Spare Part Number
==============================================================================
1          Service Aids Kit (not shown).            100767-001
           Includes:
           a. Connector removal tool
           b. Display bezel removal tool
           c. Serial interface loopback
              plug
           d. Parallel interface
              loopback plug
           e. Screwdriver with bits
------------------------------------------------------------------------------
2          Miscellaneous Screws Kit
           (See Table 3-11 for contents
           and where-used matrix.)                   213545-001
------------------------------------------------------------------------------
3          Shipping carton
           (Quantity = 5 /not shown)                 213623-001
------------------------------------------------------------------------------
4          Shipping carton with packing
           (Quantity = 1 /not shown)                 213619-001
------------------------------------------------------------------------------
5          Shipping carton, display
           (Quantity = 1 /not shown)                 213620-001
==============================================================================

Table 3-11. Computer Miscellaneous Screws Kit Contents and Use
==============================================================================
Package:            1

Description:        8TX26060M Screw

Drive:              T8/Slotted

Quantity:           25

Where Used:         Display bezel to display panel assembly
                    (Quantity = 4)
                    Clutch assembly to display panel assembly
                    (Quantity = 2)
                    Clutch assembly to CPU Base assembly (Quantity = 2)
                    CPU cover to CPU base assembly (Quantity = 3)
                    CPU base assembly to keyboard (Quantity = 3)
```

```
                        Rear of keyboard to CPU base assembly
                        (Quantity = 2)
                        Left clutch cradle (Quantity = 1)
                        Processor board to CPU base assembly (Quantity = 1)
                        Power board to CPU base assembly (Quantity = 1)
                        System board to CPU base assembly (Quantity = 2)
-----------------------------------------------------------------------------
Package:                2

Description:            8TX25035M Screw

Drive:                  T8/Slotted

Quantity:               25

Where Used:             CPU base assembly to keyboard (Quantity = 4)
                        EasyPoint II controller to keyboard (Quantity = 2)
-----------------------------------------------------------------------------
Package:                3

Description:            Standoff

Drive:                  3/16" Hex

Quantity:               5

Where Used:             Processor board to CPU base assembly (Quantity = 1)
                        CD-ROM release bar to keyboard (Quantity = 1)
                        Battery release holder assembly to keyboard
                        (Quantity = 1)
                        MultiBay release holder assembly to keyboard
                        (Quantity = 1)
-----------------------------------------------------------------------------
Package:                4

Description:            Screwlock

Drive:                  3/16" Hex

Quantity:               6

Where Used:             Serial connector on I/O panel (Quantity = 2)
                        Parallel connector on I/O panel (Quantity = 2)
                        External monitor connector on I/O panel
                        (Quantity = 2)
-----------------------------------------------------------------------------
Package:                5

Description:            Screwlock

Drive:                  3/16" Hex

Quantity:               2

Where Used:             External options connector on I/O panel
                        (Quantity = 2)
=============================================================================
```

Chapter 3.11 Documentation

```
Table 3-12. Spare Parts - Documentation
===============================================================================
Description                                         Spare Part Number
===============================================================================
Compaq LTE 5000 Family of Personal Computers
Maintenance & Service Guide                         213622-001

Compaq LTE 5000 Family of Personal Computers
Illustrated Parts Map (Quantity = 10) *             213677-002

Compaq LTE 5000 Family of Personal Computers
Beyond Setup Guide (Brazilian/Portuguese)           213624-201

Compaq LTE 5000 Family of Personal Computers
Beyond Setup Guide (Danish)                         213624-081

Compaq LTE 5000 Family of Personal Computers
Beyond Setup Guide (Dutch)                          213624-331

Compaq LTE 5000 Family of Personal Computers
Beyond Setup Guide (English)                        213624-001

Compaq LTE 5000 Family of Personal Computers
Beyond Setup Guide (Finnish)                        213624-351

Compaq LTE 5000 Family of Personal Computers
Beyond Setup Guide (French)                         213624-051

Compaq LTE 5000 Family of Personal Computers
Beyond Setup Guide (German)                         213624-041

Compaq LTE 5000 Family of Personal Computers
Beyond Setup Guide (Italian)                        213624-061

Compaq LTE 5000 Family of Personal Computers
Beyond Setup Guide (Japanese)                       213624-291

Compaq LTE 5000 Family of Personal Computers
Beyond Setup Guide (Latin American, Spanish)        213624-161

Compaq LTE 5000 Family of Personal Computers
Beyond Setup Guide (Norwegian)                      213624-091

Compaq LTE 5000 Family of Personal Computers
Beyond Setup Guide (Swedish)                        213624-101

Essentials of MS-DOS and Microsoft Windows (English)    182343-001

Essentials of MS-DOS and Microsoft Windows (French)     182343-051

Essentials of MS-DOS and Microsoft Windows (German)     182343-041

Essentials of MS-DOS and Microsoft Windows (Italian)    182343-061
===============================================================================
Description                                         Spare Part Number
===============================================================================
Essentials of MS-DOS and Microsoft Windows (Spanish)    182343-071
```

```
Microsoft Windows and MS-DOS 6 User's Guide (Dutch)      196078-331

Microsoft Windows and MS-DOS 6 User's Guide (Swedish)    196078-101

Introducing Microsoft Windows 95 User's Guide
(Brazilian Portuguese)                                   182793-201

Introducing Microsoft Windows 95 User's Guide
(Danish)                                                 182793-081

Introducing Microsoft Windows 95 User's Guide
(Dutch)                                                  182793-331

Introducing Microsoft Windows 95 User's Guide
(English)                                                182793-001

Introducing Microsoft Windows 95 User's Guide
(Finnish)                                                182793-351

Introducing Microsoft Windows 95 User's Guide
(French)                                                 182793-051

Introducing Microsoft Windows 95 User's Guide
(German)                                                 182793-041

Introducing Microsoft Windows 95 User's Guide
(Italian)                                                182793-061

Introducing Microsoft Windows 95 User's Guide
(Japanese)                                               182793-291

Introducing Microsoft Windows 95 User's Guide
(Latin American Spanish)                                 182793-161

Introducing Microsoft Windows 95 User's Guide
(Norwegian)                                              182793-091

Introducing Microsoft Windows 95 User's Guide
(Swedish)                                                182793-101

Compaq LTE 5000 Family of Personal Computers Online
User's Guide (Dutch) **                                  213625-331

Compaq LTE 5000 Family of Personal Computers Online
User's Guide (English) **                                213625-001

Compaq LTE 5000 Family of Personal Computers Online
User's Guide (French) **                                 213625-051

Compaq LTE 5000 Family of Personal Computers Online
User's Guide (German) **                                 213625-041

Compaq LTE 5000 Family of Personal Computers Online
User's Guide (Italian) **                                213625-061

Compaq LTE 5000 Family of Personal Computers Online
User's Guide (Japanese) **                               213625-291

Compaq LTE 5000 Family of Personal Computers Online
```

```
User's Guide (Latin American Spanish) **              213625-161

Compaq LTE 5000 Family of Personal Computers Online
User's Guide (Swedish) **                              213625-101
--------------------------------------------------------------------------
 * Not available in Europe, Middle East, or Africa.
** The Compaq LTE 5000 Family of Personal Computers Online User's Guide is
   provided on 3.5-inch diskette.
==========================================================================
```

Chapter 3.12 Software

```
Table 3-13. Spare Parts - Software
==========================================================================
Description                                       Spare Part Number
==========================================================================
LTE 5000 Video Drivers Support Kit                213638-XXX

LTE 5000 CD-ROM Drivers Support Kit               213639-XXX

LTE 5000 Audio Driver Support Kit                 213640-XXX

LTE 5000 Windows Sound System                     213641-XXX

LTE 5000 Network Interface Drivers Kit            213643-XXX

TranXit Infrared Software Utility                 213644-XXX

Windows 3.1x Software Drivers Kit                 213645-XXX

Windows 95 Software Drivers Kit                   182886-XXX

LTE 5000 Mouse Driver Kit                         182357-XXX

LTE 5000 System ROMPaq, English                   182358-001

LTE 5000 PC Card Drivers Kit                      182359-XXX

LTE 5000 Supplemental Support Diskette            182360-XXX

Advanced/User Diagnostics Diskette (English)      109728-001

Advanced/User Diagnostics Diskette (French)       109728-051

Advanced/User Diagnostics Diskette (German)       109728-041

Advanced/User Diagnostics Diskette (Italian)      109728-061

Advanced/User Diagnostics Diskette (Spanish)      109728-071

QuickFind for Windows CD-ROM Kit (US)             137906-0XX *

QuickFind for Windows CD-ROM Kit (Outside US)     137907-0XX *
--------------------------------------------------------------------------
* Software (except ROM software) available in the following languages:
  Danish (-081), Dutch (-331), English (-001), Finnish (-351), French
  (-051), German (-041), Italian (-061), Norwegian (-091), Portuguese
  (-131), Spanish (-071), and Swedish (-101). Please provide appropriate
```

```
   language code when ordering, e.g., 213638-001 for English LTE 5000 Video
   Drivers Support Kit.
=============================================================================

* NOTE: QuickFind is updated monthly. To complete the QuickFind part
        number add the suffix from the table below for the desired month.
        If you do not specify the 3-digit suffix, the default is the
        current month in which the order is placed.

QuickFind Part Number Suffix
=============================================================================
Suffix          Month                   Suffix          Month
=============================================================================
-001            January                 -007            July

-002            February                -008            August

-003            March                   -009            September

-004            April                   -010            October

-005            May                     -011            November

-006            June                    -012            December
=============================================================================
```

Chapter 3.13 MultiBay Expansion Base Cover Assemblies
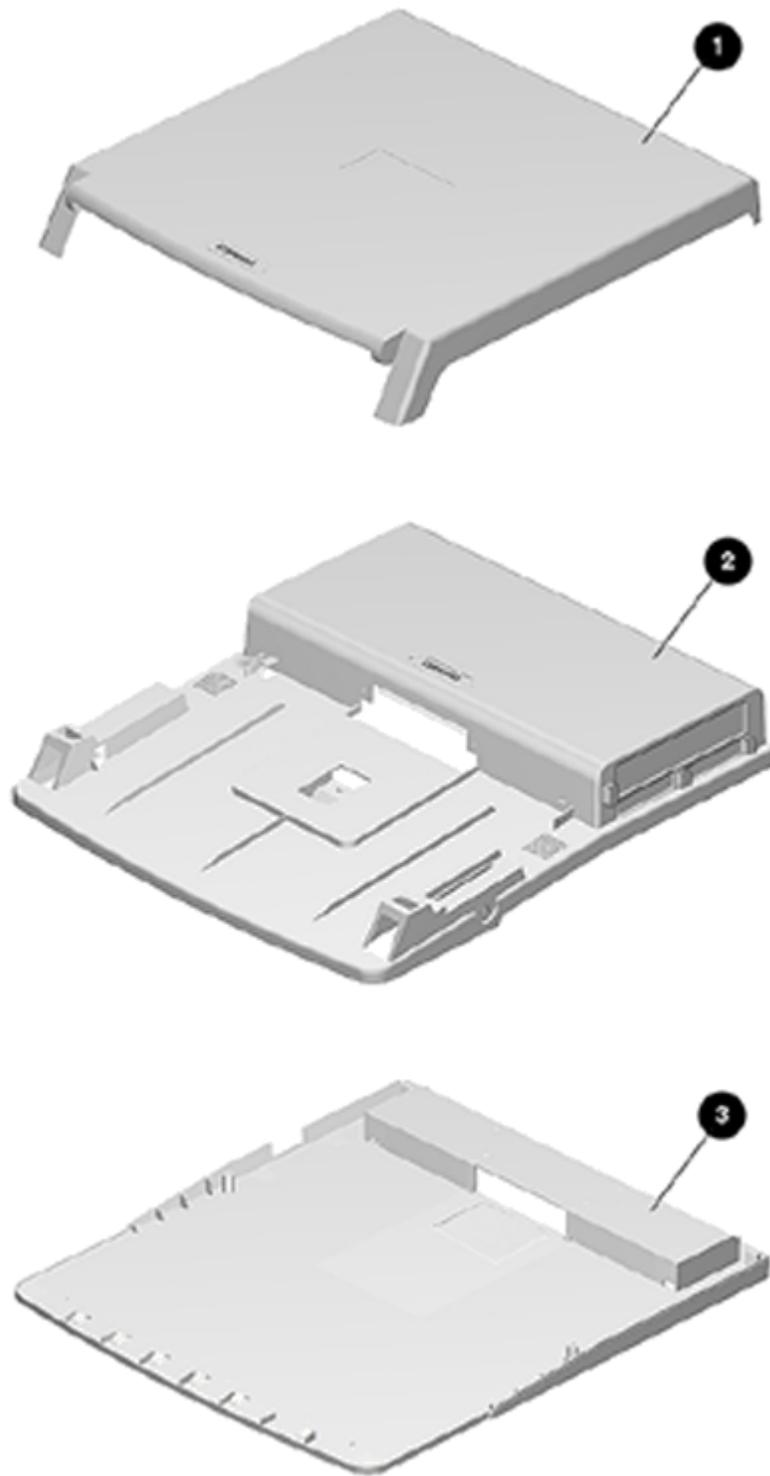
Figure 3-10. MultiBay Expansion Base Cover Assemblies

```
Table 3-14. Spare Parts - MultiBay Expansion Base Cover Assemblies
===========================================================================
Item        Description                     Spare Part Number
===========================================================================
1           Monitor support cover with logo    213713-001
---------------------------------------------------------------------------

2           Top cover assembly. Includes       213711-001
            EMI shield, release mechanism,
            doors, guides, monitor support
            cover slot caps with springs,
            labels, and logo.
---------------------------------------------------------------------------
3           Bottom cover assembly. Includes    213712-001
            feet, MPEG connector door, and
            labels.
===========================================================================
```

3.13A MultiBay ISA Expansion Base Cover Assemblies
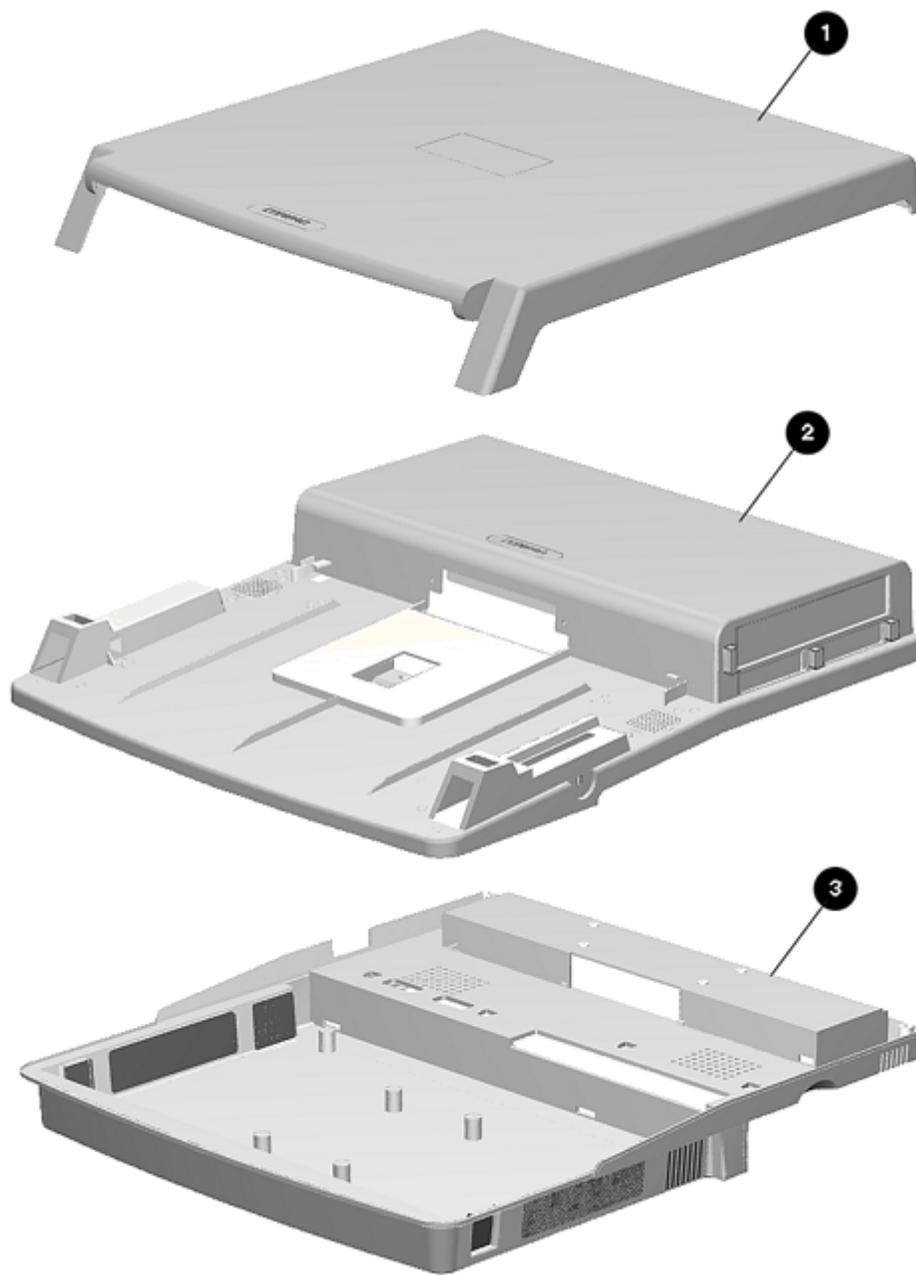
Figure 3-10A. MultiBay-ISA Expansion Base Cover Assemblies

```
Table 3-14A. Spare Parts - MultiBay ISA Expansion Base Cover Assemblies
===========================================================================
Item   Description                                 Spare Part Number
===========================================================================
1      Monitor support cover w/logo                213713-001

2      Top cover assembly. Includes EMI shield,
       release mechanism, doors, guides, monitor
       support cover slot caps with springs,
       labels, and logo.                           213711-003

3      Base assembly. Includes feet and labels.    241949-001
===========================================================================
```

Chapter 3.14 MultiBay Expansion Base Major Components
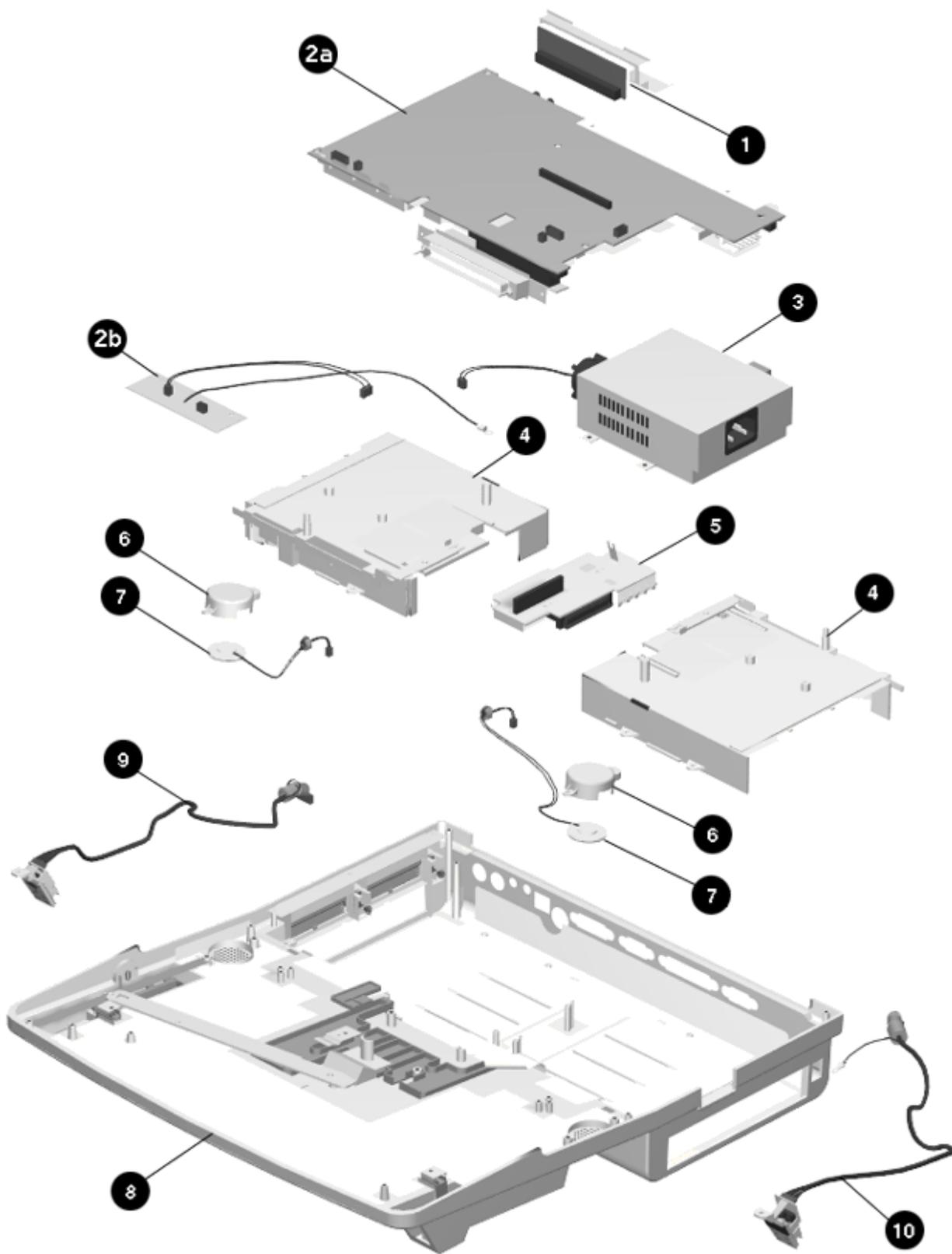
Figure 3-11. MultiBay Expansion Base Major Components

```
Table 3-15. Spare Parts - MultiBay Expansion Base Major Components
===============================================================================
Item          Description                      Spare Part Number
===============================================================================
 1            MPEG connector with frame        213761-001
-------------------------------------------------------------------------------
 2            Main board kit. Includes:        213706-001
             a. Main board
             b. Fan control board
-------------------------------------------------------------------------------
 3            Power supply with fan            213707-001
-------------------------------------------------------------------------------
 4            MultiBay assembly with ejector   213757-001
-------------------------------------------------------------------------------
 5            MultiBay connector board         213758-001
-------------------------------------------------------------------------------
 6            Speaker holder (Part of          See Section 3.16
             Miscellaneous Plastics Kit
             213717-001)
-------------------------------------------------------------------------------
 7            Speaker                          213763-001
-------------------------------------------------------------------------------
 8            Top cover assembly (See Section
             3.15 for details)                 213711-001
-------------------------------------------------------------------------------
 9            Power switch board with cable    213714-001
-------------------------------------------------------------------------------
10            IrDA board with cable            213715-001
===============================================================================
```

3.14A MultiBay ISA Expansion Base Major Components
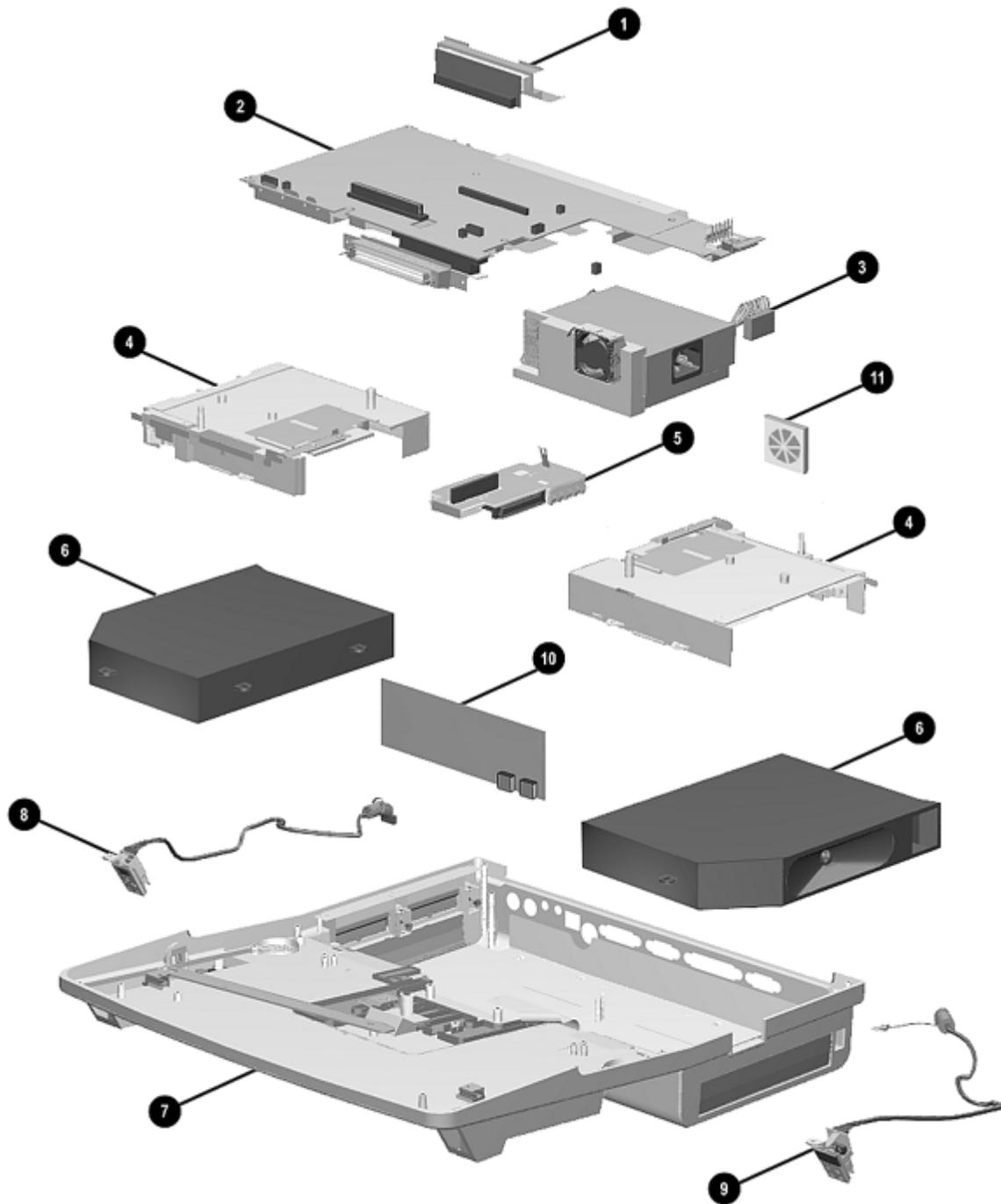
Figure 3-11A. MultiBay-ISA Expansion Base Major Components

```
Table 3-15A. Spare Parts - MultiBay ISA Expansion Base Major Components
===========================================================================
Item    Description                     Spare Part Number
===========================================================================
 1      MPEG connector w/frame          242128-001

 2      Main I/O board                  241958-001

 3      Power supply w/fan              241959-001

 4      MultiBay assembly w/ejector     Included with Item 7

 5      MultiBay connector board        Included with Item 7

 6      Speaker assembly                241956-001

 7      Top cover assembly (See
        Section 3.15 for details)       213711-003

 8      Power switch board w/cable      213714-001

 9      IrDA board w/cable              213715-001

10      ISA Backplane board             241967-001
===========================================================================
```

Chapter 3.15 MultiBay and MultiBay ISA Expansion Base Top Cover Assembly Components
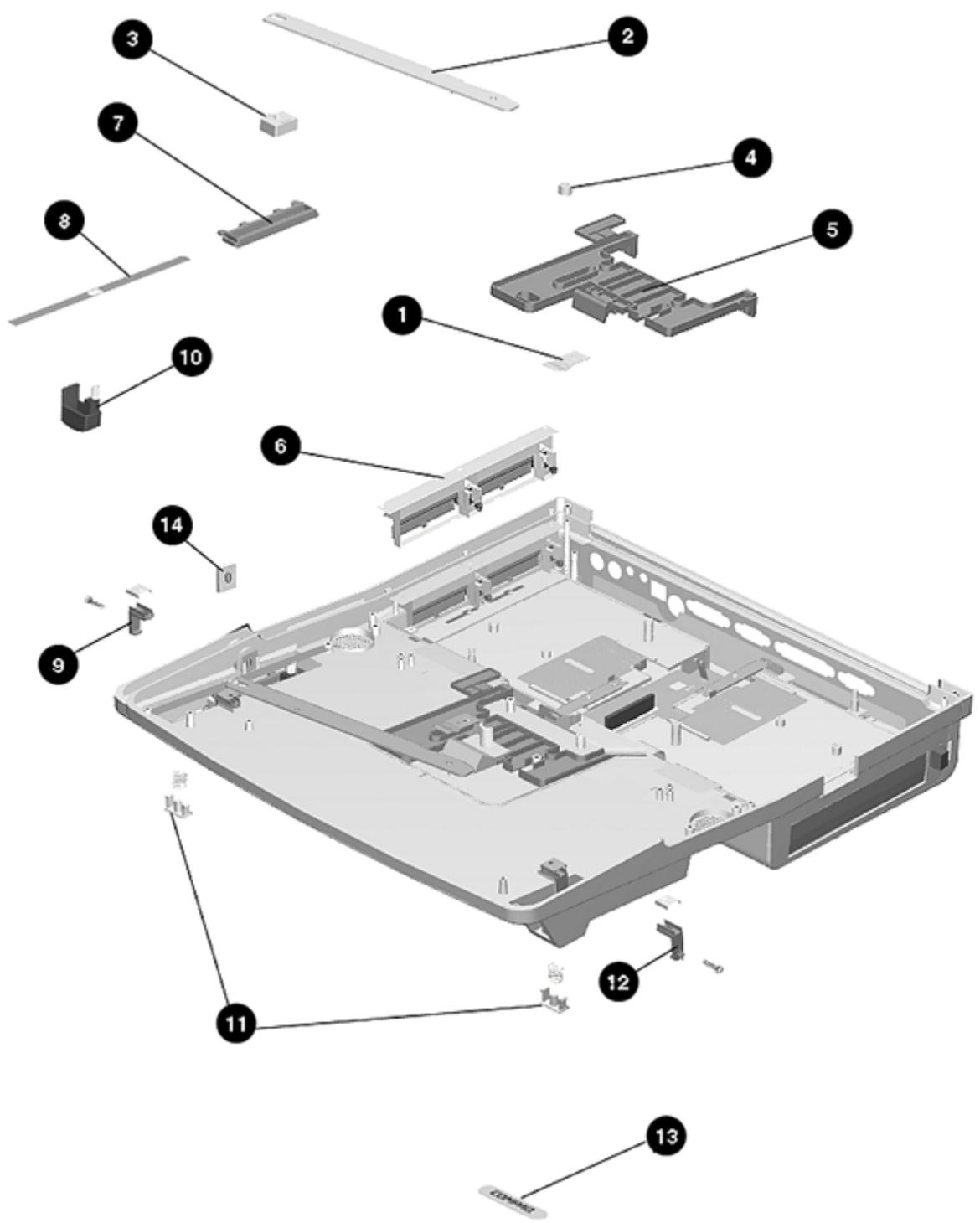
Figure 3-12. MultiBay and MultiBay-ISA Expansion Base Top Cover Assembly
Components

```
Table 3-16. Spare Parts - MultiBay and MultiBay ISA Expansion Base Top
          Cover Assembly Components
===========================================================================
Description                                   Spare Part Number
===========================================================================
Top Cover Assembly Includes the following:    213711-001

 1. Docking mechanism spring (NOTE 1)

 2. Docking mechanism bar (NOTE 1)

 3. Docking mechanism slide block (NOTE 1)

 4. Docking mechanism bushing (NOTE 1)

 5. Docking mechanism puller (NOTE 1)

 6. PC Card door assembly (NOTE 2)

 7. Docking mechanism handle cover (NOTE 1)

 8. Docking mechanism handle shield (NOTE 1)

 9. Alignment guide, right (NOTE 1)


10. Docking mechanism lever (NOTE 1)

11. Monitor support cover slot cap and
    spring (NOTE 2)

12. Alignment guide, left (NOTE 1)

13. Logo

14. Security lock bracket (NOTE 2)
---------------------------------------------------------------------------
NOTES 1: Also included in Mechanical Kit (SPS number 213756-001); see
         Section 3.17.

      2: Also included in Miscellaneous Plastics Kit (SPS number
         213717-001); see Section 3.16.
===========================================================================
```

Chapter 3.16 MultiBay and MultiBay ISA Expansion Base Miscellaneous Plastics Kit
MultiBay and MultiBay-ISA expansion bases
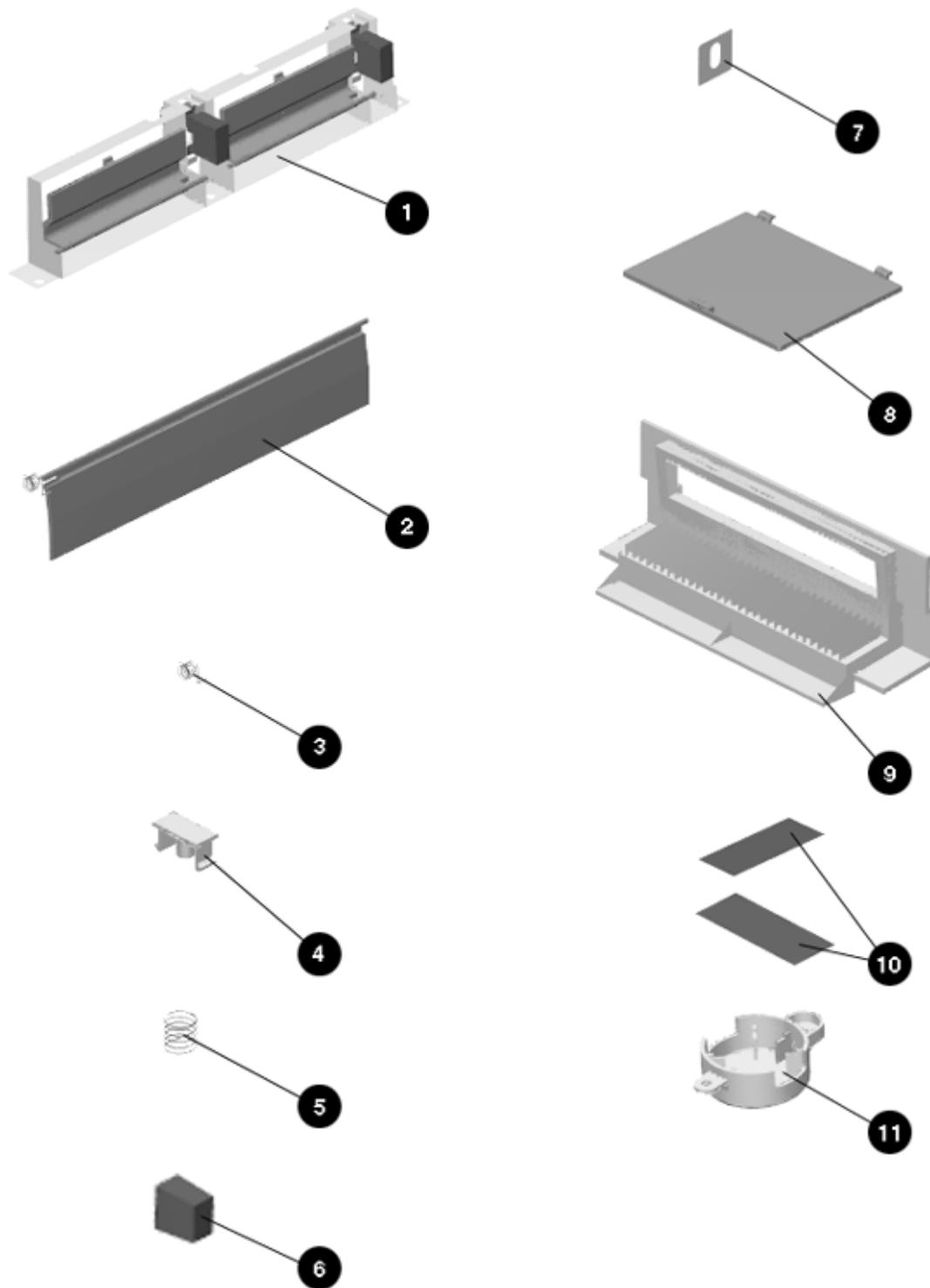
Figure 3-13. MultiBay and MultiBay-ISA Expansion Base Miscellaneous Plastics Kit

```
Table 3-17. Spare Parts - MultiBay and MultiBay ISA Expansion Base
           Miscellaneous Plastics Kit
===========================================================================
Description                                 Spare Part Number
===========================================================================
Miscellaneous Plastics Kit. Contains the    213717-001
following:


 1. PC Card doors assembly

 2. MultiBay door (Quantity = 2)

 3. MultiBay door spring (Quantity = 2)

 4. Monitor support cover slot caps

 5. Monitor support cover slot cap spring

 6. MultiBay eject button (Quantity = 2)

 7. Security lock bracket

 8. MPEG connector door

 9. Computer interface connector frame


10. Feet (Quantity = 6)

11. Speaker bracket with shield (Quantity = 2)

12. MultiBay connector board grounding
    tab (not shown)

13. MultiBay grounding tab
    (Quantity = 7 /not shown)
===========================================================================
```

Chapter 3.17 MultiBay and MultiBay ISA Expansion Base Mechanical Kit
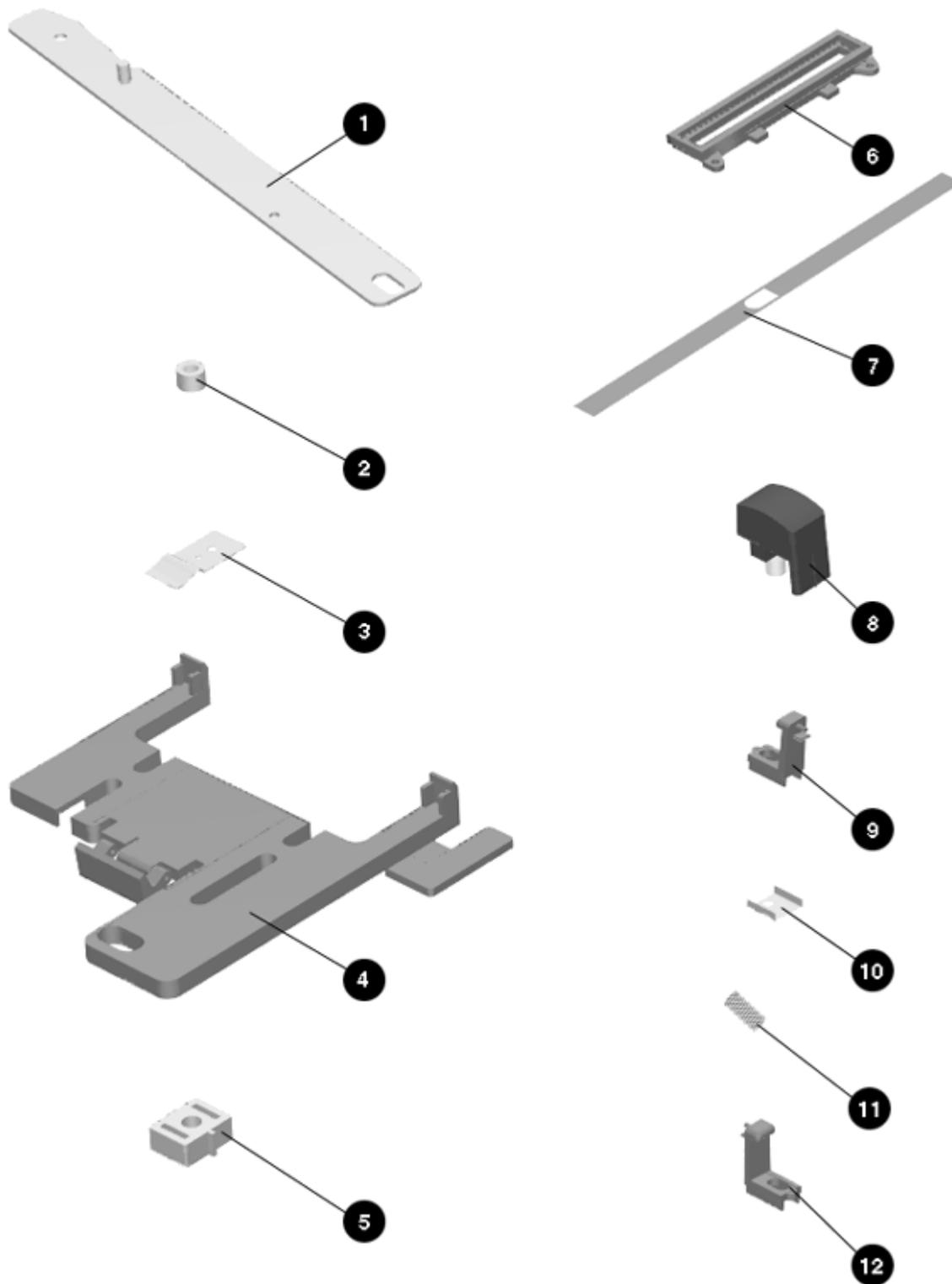
Figure 3-14. MultiBay and MultiBay-ISA Expansion Base Mechanical Kit

```
Table 3-18. Spare Parts - MultiBay and MultiBay ISA Expansion Base
           Mechanical Kit
================================================================================
Description                                     Spare Part Number
================================================================================
Mechanical Kit. Contains the following:         213756-001


 1. Docking mechanism bar

 2. Docking mechanism bar bushing

 3. Docking mechanism spring

 4. Docking mechanism puller assembly

 5. Docking mechanism slide block

 6. Docking mechanism handle cover

 7. Docking mechanism handle shield

 8. Docking mechanism lever

 9. Alignment guide (right)


10. Alignment guide plate (Quantity = 2)

11. Alignment guide spring (Quantity = 2)

12. Alignment guide (left)

13. Alignment guide screw
    (Quantity = 4 /not shown)
================================================================================
```

Chapter 3.18 MultiBay and MultiBay ISA Expansion Base Miscellaneous Parts

```
Table 3-19. Spare Parts: MultiBay Expansion Base Miscellaneous Parts
================================================================================
Description                                     Spare Part Number
================================================================================
MultiBay expansion base shipping container
(Quantity = 5)                                  213759-001

MultiBay expansion base shipping container
with packaging                                  213760-001

Screws kit (see Table 3-20 for contents and
where-used matrix)                              213716-001

Power cord, MultiBay Expansion Base (Aust)      213673-011

Power cord, MultiBay Expansion Base (Den)       213673-008

Power cord, MultiBay Expansion Base (Europe)    213673-021

Power cord, MultiBay Expansion Base (Japan)     213673-391

Power cord, MultiBay Expansion Base (U.K.)      213673-031
```

```
Power cord, MultiBay Expansion Base (U.S.)          213673-001
=============================================================================

Table 3-20. MultiBay and MultiBay ISA Expansion Base Miscellaneous Screws
            Kit Contents and Use
=============================================================================
Description:          8TX25060M Screw

Drive:                T8/Slotted

Quantity:             25

Where Used:           Bottom cover to top cover assembly (Quantity = 10)
                      Main board to top cover assembly (Quantity = 5)
                      Power supply to top cover assembly (Quantity = 4)
                      MultiBay to top cover assembly (Quantity = 3)
                      MultiBay connector board to top cover assembly
                      (Quantity = 3)
                      PC card door assembly to top cover assembly
                      (Quantity 3)
                      IrDA board to top cover assembly (Quantity = 1)
                      Power switch board to top cover assembly
                      (Quantity = 1)
                      Speaker holder to top cover assembly (Quantity = 2)
                      Docking mechanism spring to top cover assembly
                      (Quantity = 1)
                      Computer connector bezel to top cover assembly
                      (Quantity = 2)
-----------------------------------------------------------------------------
Description:          8TXWC25100M Nylok Screw

Drive:                T8/Slotted

Quantity:             25

Where Used:           Docking mechanism bar to release puller
                      (Quantity = 1)
                      Docking mechanism bar to release knob (Quantity = 1)
-----------------------------------------------------------------------------
Description:          SPF25080M Shoulder Screw

Drive:                T8/Slotted

Quantity:             25

Where Used:           Computer connector bezel to top cover assembly
                      (Quantity = 2)
-----------------------------------------------------------------------------
Description:          8TX25060M Nylok Screw

Drive:                T8/Slotted

Quantity:             5

Where Used:           Docking mechanism spring to top cover (Quantity = 1)
=============================================================================
```

Chapter 3.19 MultiBay and MultiBay ISA Expansion Base Documentation

```
Table 3-21. Spare Parts: MultiBay Expansion Base Documentation
===========================================================================
Description                                         Spare Part Number
===========================================================================
LTE 5000 MultiBay Expansion Base Installation
and Operations Guide (Dutch)                        213762-331

LTE 5000 MultiBay Expansion Base Installation
and Operations Guide (English)                      213762-001

LTE 5000 MultiBay Expansion Base Installation
and Operations Guide (French)                       213762-051

LTE 5000 MultiBay Expansion Base Installation
and Operations Guide (German)                       213762-041

LTE 5000 MultiBay Expansion Base Installation
and Operations Guide (Italian)                      213762-061

LTE 5000 MultiBay Expansion Base Installation
and Operations Guide (Japanese)                     213762-291

LTE 5000 MultiBay Expansion Base Installation
and Operations Guide (Spanish)                      213762-071

LTE 5000 MultiBay Expansion Base Installation
and Operations Guide (Swedish)                      213762-101
===========================================================================
```

Chapter 4. Removal and Replacement Preliminaries

Chapter 4.0 Introduction

This chapter provides general service information for the computer.
Adherence to the procedures and precautions described in this chapter is
essential for proper service.

Chapter 4.1 Electrostatic Discharge Information

A sudden discharge of static electricity from your finger or other
conductor can destroy static-sensitive devices or microcircuitry. Often
the spark is neither felt nor heard, but damage occurs. An electronic
device exposed to electrostatic discharge (ESD) may not be affected at all
and can work perfectly throughout a normal cycle. Or it may function
normally for a while, then degrade in the internal layers, reducing its
life expectancy.

Networks built into many integrated circuits provide some protection, but
in many cases, the discharge contains enough power to alter device
parameters or melt silicon junctions.

4.1.1 Generating Static

Table 4-1 shows how different activities generate static electricity and
at different electrostatic voltage levels.

Table 4-1. Typical Electrostatic Voltages
```
===========================================================================
                                   -- Relative Humidity --
Event                              10%         40%         55%
===========================================================================
Walking across carpet              35,000 V    15,000 V    7,500 V

Walking across vinyl floor         12,000 V    5,000 V     3,000 V

Motions of bench worker            6,000 V     800 V       400 V

Removing DIPS from plastic tube    2,000 V     700 V       400 V

Removing DIPS from vinyl tray      11,500 V    4,000 V     2,000 V

Removing DIPS from Styrofoam       14,500 V    5,000 V     3,500 V

Removing bubble pack from PCB      26,500 V    20,000 V    7,000 V

Packing PCBs in foam-lined box     21,000 V    11,000 V    5,000 V
---------------------------------------------------------------------
NOTE: 700 volts can degrade a product.
===========================================================================
```

4.1.2 Preventing Electrostatic Damage to Equipment

Many electronic components are sensitive to ESD. Circuitry design and
structure determine the degree of sensitivity. The following proper
packaging and ground precautions are necessary to prevent damage.

o To avoid hand contact, transport products in static-safe containers such
  as tubes, bags, or boxes.

o Protect all electrostatic parts and assemblies with conductive or
  approved containers or packaging.

o Keep electrostatic sensitive parts in their containers until they arrive
  at static-free stations.

o Place items on a grounded surface before removing them from their
  container.

o Always be properly grounded when touching a sensitive component or
  assembly.

o Place reusable electrostatic-sensitive parts from assemblies in
  protective packaging or conductive foam.

Use transporters and conveyors made of antistatic belts and roller
bushings. Mechanized equipment used for moving materials must be wired to
ground and proper materials selected to avoid static charging. When
grounding is not possible, use an ionizer to dissipate electric charges.

4.1.3 Preventing Damage to Drives

To prevent static damage to diskette drives and hard drives, use the
following precautions:

o Handle drives gently, using static-guarding techniques.

o Avoid touching the connectors on the hard drive.

o Store drives in the carrying case. Use the Hard Drive Carrying case, not
  the MultiBay Device Carrying Case.

o Avoid dropping drives from any height onto any surface.

o Handle drives on surfaces that have at least one inch of shock-proof
  foam.

4.1.4 Grounding Methods

The method for grounding must include either a wrist strap or a foot strap
at a grounded workstation. When seated, wear a wrist strap connected to a
grounded system. When standing, use footstraps and a grounded floor mat.

Table 4-2. Static Shielding Protection Levels
===

```
Method                                    Voltage
=========================================================================
Antistatic plastic                        1,500 V

Carbon-loaded plastic                      7,500 V

Metallized laminate                       15,000 V
=========================================================================
```

4.1.5 Grounding Workstations

To prevent static damage at the workstation, use the following
precautions:

o Cover the workstation with approved static-dissipative material. Provide
  a wrist strap connected to the work surface and properly grounded tools
  and equipment.

o Use static-dissipative mats, foot straps, or air ionizers to give added
  protection.

o Handle electrostatic sensitive components, parts, and assemblies by the
  case or PCM laminate. Handle them only at static-free workstations.

o Avoid contact with pins, leads, or circuitry.

o Turn off power and input signals before inserting and removing
  connectors or test equipment.

o Use fixtures made of static-safe materials when fixtures must directly
  contact dissipative surfaces.

o Keep work area free of nonconductive materials such as ordinary plastic
  assembly aids and Styrofoam.

o Use field service tools, such as cutters, screwdrivers, and vacuums,
  that are conductive.

o Use a portable field service kit with a static-dissipative vinyl pouch
  that unfolds to become a work mat. Also, use a wrist strap and a ground
  cord for the work surface. Ground the cord to the chassis of the
  equipment undergoing test or repair.

4.1.6 Grounding Equipment

Use the following equipment to prevent static electricity damage to
equipment:

Wrist Straps are flexible straps with a minimum of one megohm +/- 10%
resistance in the ground cords. To provide proper ground, a strap must be
worn snug against the skin. On grounded mats with more banana-plug
connectors, connect a wrist strap with alligator clips.

Heelstraps/Toestraps/Bootstraps can be used at standing workstations and
are compatible with most types of shoes or boots. On conductive floors or
dissipative floor mats, use them on both feet with a minimum of one-megohm
resistance between the operator and ground. To be effective, the

conductive strips must be worn in contact with the skin.

4.1.7 Recommended Materials and Equipment

Other materials and equipment that are recommended for use in preventing static electricity include:

o Antistatic tape

o Antistatic smocks, aprons, or sleeve protectors

o Conductive bins and other assembly or soldering aids

o Conductive foam

o Conductive tabletop workstations with ground cord of one-megohm resistance

o Static-dissipative table or floor mats with hard tie to ground

o Field service kits

o Static awareness labels

o Wrist straps and footwear straps providing one-megohm +/- 10% resistance

o Material handling packages

o Conductive plastic bags

o Conductive plastic tubes

o Conductive tote boxes

o Metal tote boxes

o Opaque shielding bags

o Transparent metallized shielding bags

o Transparent shielding tubes

Chapter 4.2 Service Considerations

Listed below are some of the considerations that you should keep in mind during the disassembly and assembly of the computer.

4.2.1 Tool and Software Requirements

To service the computer, you need the following:

o Torx T-8 screwdriver

o 3/16-inch nut driver (for screwlocks and standoffs)

o Connector removal tool

o Display bezel removal tool

o Diagnostics software

4.2.2 Screws

The screws used in the computer are not interchangeable. If an incorrect
screw is used during the reassembly process, it can damage the unit.
Compaq strongly recommends that all screws removed during disassembly be
kept with the part that was removed, then returned to their proper
locations.

IMPORTANT: As each subassembly is removed from the computer, it should be
          placed away from the work area to prevent damage.

4.2.3 Cables and Connectors

Cables must be handled with extreme care to avoid damage. Apply only the
tension required to seat or unseat the cables during insertion or removal
from the connector. Handle cables by the connector whenever possible. In
all cases, avoid bending, twisting, or tearing the cables, and ensure that
the cables are routed in such a way that they cannot be caught or snagged
by parts being removed or replaced.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> CAUTION <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

When servicing this computer, ensure that cables are placed in their
proper location during the reassembly process. Improper cable placement
can damage the computer.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Cables

Use the following precautions when handling cables to avoid damage to the
cable or computer:

o Always handle cables by their connectors.

o Avoid bending, twisting, or pulling on the cables.

o Apply minimum required force when seating or unseating the cables from
  their connectors.

o Place the cables in such a manner that they cannot be caught or snagged
  by parts being removed or replaced.

o Handle flex cables with extreme care; they can tear easily.

ZIF Connectors

The computer uses a zero insertion force (ZIF) connector for the keyboard cable to the system board. To remove a cable from a ZIF connector, lift both corners of the ZIF connector slide simultaneously with constant light force. Then remove the cable (Figure 4-1).

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> CAUTION <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

A ZIF connector and its attached cable can be easily damaged. Handle only the connector slide when removing or replacing a cable. Never pull or twist on the cable while it is connected.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Figure 4-1. Removing a Cable from a ZIF Connector

4.2.4 Plastic Parts

Plastic parts can be damaged by the use of excessive force during disassembly and reassembly. When handling the plastic parts, use care. Use a bezel removal tool to separate plastic components. Apply pressure only at the points designated in the maintenance instructions.

Chapter 5. Computer Removal and Replacement Procedures

Chapter 5.0 Introduction

This chapter presents the removal and replacement procedures for the computer.

Chapter 5.1 Serial Number

The computer serial number should be reported to Compaq when requesting information or ordering spare parts. The serial number is displayed immediately above the serial connector on the rear of the computer (Figure 5-1).

Figure 5-1. Serial Number Location

Chapter 5.2 Disassembly Sequence Chart

Use the chart below to determine the section number and disassembly sequence for removing components from the computer.

```
5.3 Preparing for Disassembly
        5.3.1 Undocking the Computer
        5.3.2 Disconnecting the Computer
        5.3.3 Battery Pack
        5.3.4 Auxiliary Battery
        5.3.5  Hard Drive
        5.3.6 MultiBay Device
        5.3.7 PC Card

5.4 External Components
        5.4.1 Computer Logo
        5.4.2 Computer Feet
        5.4.3 Connector Cover
        5.4.4 Auxiliary Battery Compartment Door
        5.4.5 Memory Expansion Board
        5.4.6 EasyPoint II Button
        5.4.7 Hard Drive Bay Door
        5.4.8 PC Card Door

5.5 CPU Cover Assembly
        5.5.1 CPU Cover Assembly
                5.5.2 Power Switch Actuator
                5.5.3 Standby Switch Button
                5.5.4 Display Switch Button
                5.6 Microphone
                5.7 Status Panel
                5.8 Display Assembly
                        5.8.1 Display Assembly
                        5.8.6 Clutch Cradle
                        5.8.2 Display Bezel
                                5.8.3 Latches
                                5.8.4 Clutch Assembly
                                5.8.5 Brightness/Contrast Control Actuator
                5.9 Keyboard
                        5.9.1 Keyboard
                        5.9.2 EasyPoint II Controller
                        5.9.3 Battery Release Assembly
                        5.9.4 MultiBay Release Assembly
                        5.9.5 Hard Drive Latch
                        5.10 Fan
                        5.11 Processor Board
                                5.12 Microphone Extension Cable
                                5.13 Power Board
                                5.14 System Board
```

Figure 5-2. Computer Disassembly Sequence Chart

Chapter 5.3 Preparing the Computer for Disassembly

Before beginning removal and replacement procedures, complete the following procedures:

1. Undock the computer from the expansion base (Section 5.3.1).

2. Disconnect AC power and any external devices (Section 5.3.2).

3. Remove the battery pack(s) (Section 5.3.3).

4. Remove the auxiliary battery (Section 5.3.4).

5. Remove the hard drive (Section 5.3.5).

6. Remove the battery or mass storage device from the MultiBay (Section 5.3.6).

7. Remove any PC cards (section 5.3.7).

NOTE: It is important that these instructions be followed when replacement of any part requires removal of the display assembly:

Slide the display assembly back in place and replace all screws. The screws must be fully tightened to ensure that they do not touch the expansion base sensor located near the left hinge. Failure to properly seat the screws may prevent the unit from booting up.

5.3.1 Undocking the Computer

If the computer is not docked in an expansion base, proceed to Section 5.3.2. If the computer is docked in an expansion base, see Figure 5-3 and complete the following steps to undock the computer:

1. Turn off the power [1] to the expansion base.

2. Pull the docking lever forward [2] to release the computer and lift the computer out of the expansion base.
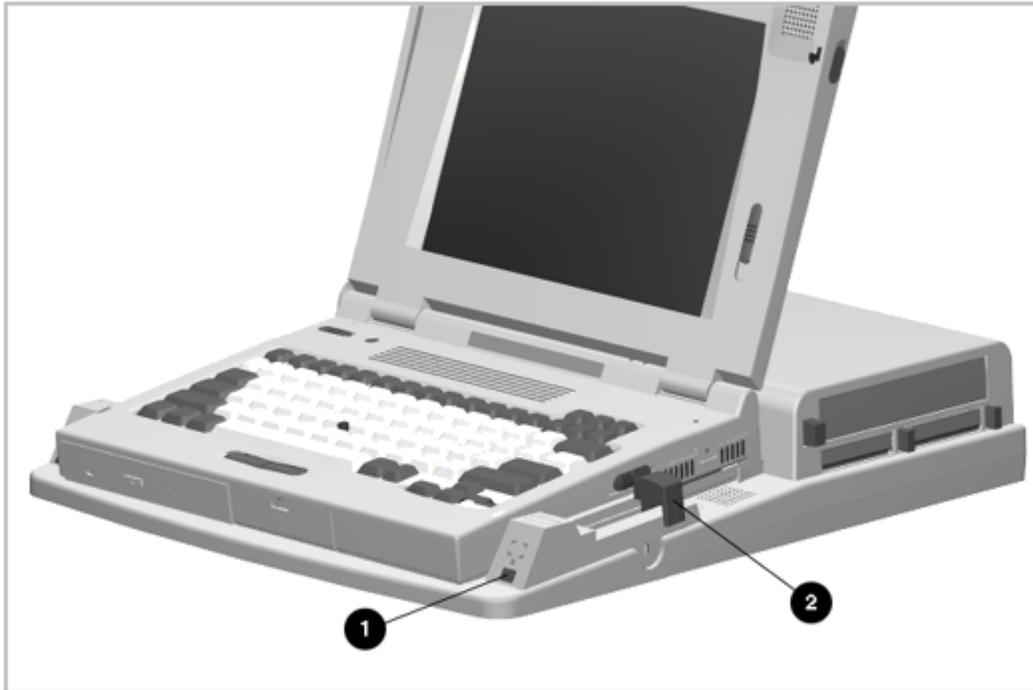
Figure 5-3. Undocking the Computer

5.3.2 Disconnecting the Computer

If the computer is docked in an expansion base, see Section 5.3.1 for undocking instructions. If the computer is not docked in an expansion base, see Figure 5-4 and complete the following steps to disconnect the computer:

1. Turn off [1] the computer.

2. Disconnect the AC Adapter power cord from the wall outlet [2].

3. Disconnect the AC Adapter [3] from the computer.

Figure 5-4. Disconnecting the Computer

4. Turn off and disconnect any external devices.

5.3.3 Battery Pack

The battery pack should be removed before performing any internal
maintenance on the computer.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> WARNING <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Metal objects can damage the battery pack as well as the battery contacts
in the battery compartment. To prevent damage, do not allow metal objects
to touch the battery contacts. Place only the battery pack for the Compaq
LTE 5000 Personal Computer into the battery compartment. Do not force the
battery pack into the bay if insertion does not occur easily.

>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> CAUTION <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Do not crush, puncture, or incinerate the battery pack. Do not open a
battery pack, as this damages the pack, makes it unusable, and exposes
potentially harmful battery components. There are no field-serviceable
parts located inside the battery pack.

>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Removing the Battery Pack

To remove the battery pack, see Figure 5-5 and complete the following
steps:

1. Slide the battery release actuator [1] toward the front of the
   computer.

2. Slide the battery pack [2] out of the battery bay.

Figure 5-5. Removing the Battery Pack

Installing the Battery Pack

To install a battery pack, complete the following steps:

1. Insert the battery pack, with the label facing up and the battery
   contacts facing the inside of the bay.

2. Push firmly on the battery pack; it will lock into place.

Using the Battery Pack as a Counterweight

With the display open and the mass storage devices and battery pack
removed from the computer bays, the weight of the display makes the
computer susceptible to being easily tipped over. When performing service

that does not require the display to be removed, you can use the battery pack as a counterweight to stabilize the computer.

To use the battery pack as a counterweight, complete the following steps:

1. Slide the battery panel all the way to the right.

2. Insert the battery pack into the battery compartment (Figure 5-6). The battery panel prevents the battery from making electrical contact.
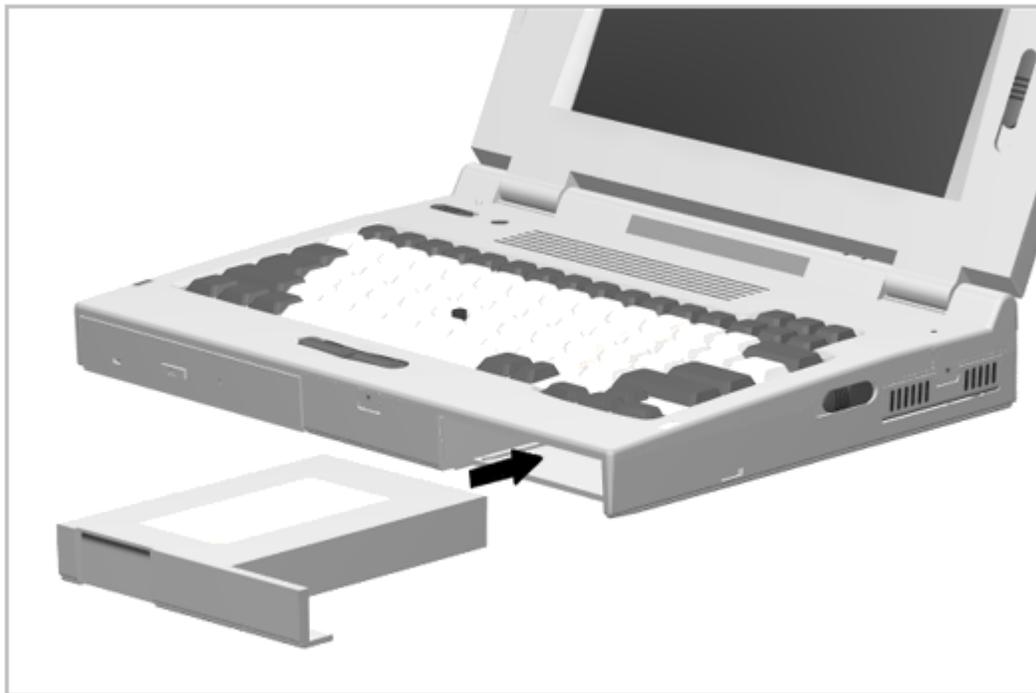
Figure 5-6. Using the Battery Pack as a Counterweight

5.3.4 Auxiliary Battery

The auxiliary battery is stored in a compartment on the bottom of the computer (Figure 5-7). The auxiliary battery should be removed prior to servicing the computer.

Removing the Auxiliary Battery

To remove the auxiliary battery, complete the following steps:

1. Using a small flat-blade screwdriver to release the door clips [1], remove the auxiliary battery compartment door [2] (Figure 5-7).
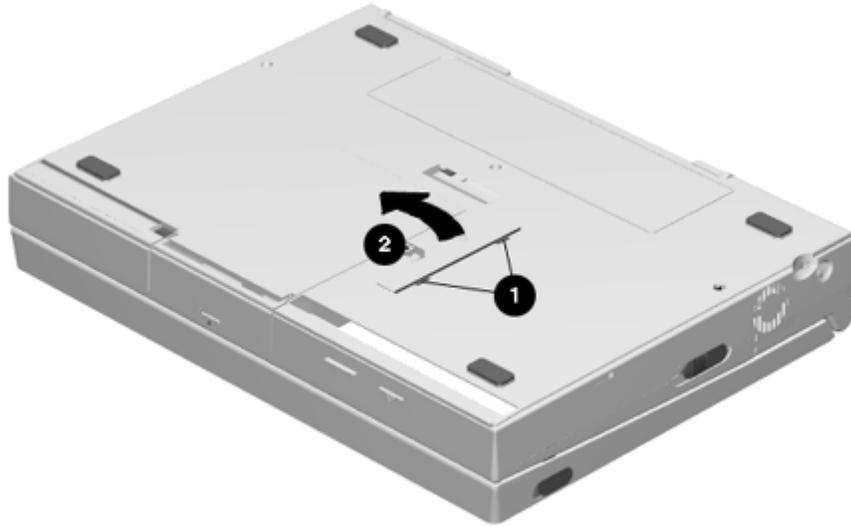
Figure 5-7. Removing the Auxiliary Battery Door

2. Lift the auxiliary battery out of its compartment [1] and disconnect the auxiliary battery cable [2] as shown in Figure 5-8.
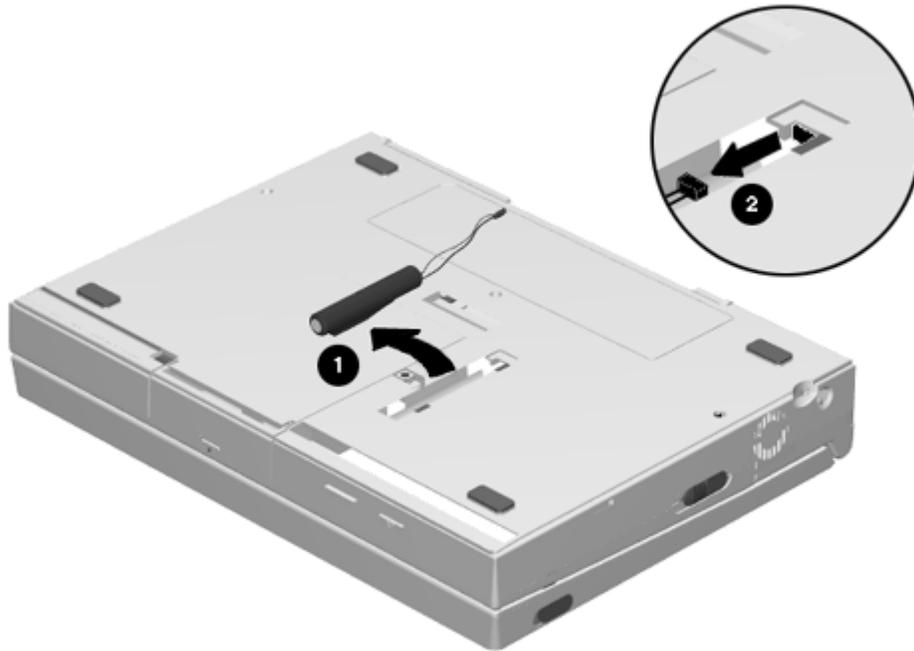
Figure 5-8. Removing the Auxiliary Battery

Installing the Auxiliary Battery

The auxiliary battery is not cylindrical but protrudes along one side.
When installing the auxiliary battery, this side of the battery must enter
the battery compartment first. To install an auxiliary battery, complete
the following steps:

1. Remove the auxiliary battery compartment door if it is not already off
   (Figure 5-7).

2. Plug the auxiliary battery cable into the connector in the rear of the
   compartment (Figure 5-8).

3. Insert the auxiliary battery into the compartment, remembering that the
   side of the battery that protrudes must enter the compartment first
   (Figure 5-9). The battery compartment door will not close if the
   battery is inserted improperly.
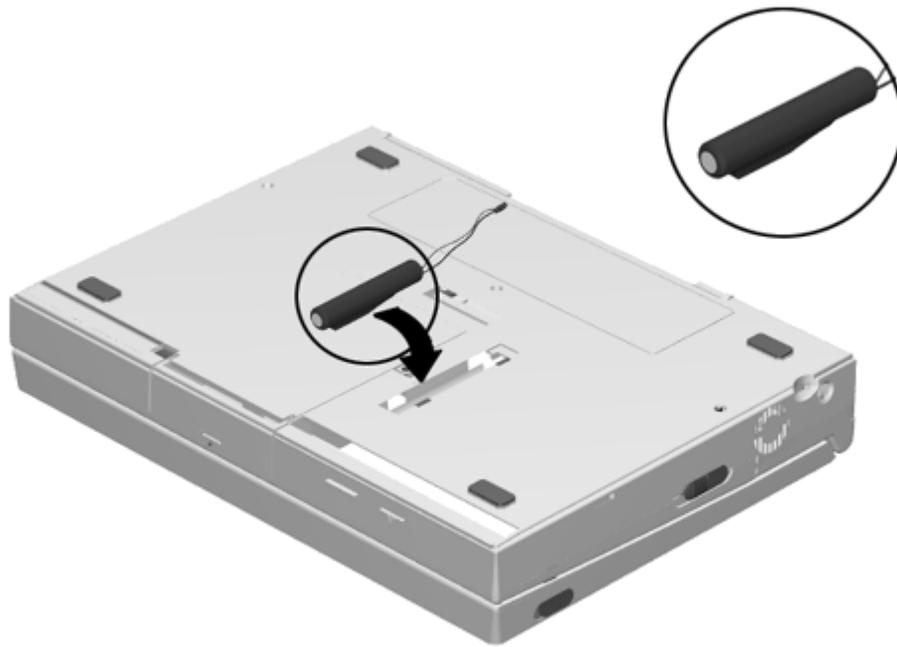
Figure 5-9. Installing the Auxiliary Battery

4. Install the auxiliary battery compartment door (Figure 5-7).

5.3.5 Hard Drive

The middle compartment on the front of the computer is a dedicated hard
drive bay. No other device should be installed in this bay. Remove the
hard drive prior to performing maintenance on the computer.

IMPORTANT: Be sure to save current data and turn the computer off before
           removing the hard drive.

Removing the Hard Drive

To remove a hard drive from the hard drive bay, complete the following
steps:

1. Remove the security screw from the hard drive release on the bottom of
   the computer (Figure 5-10).
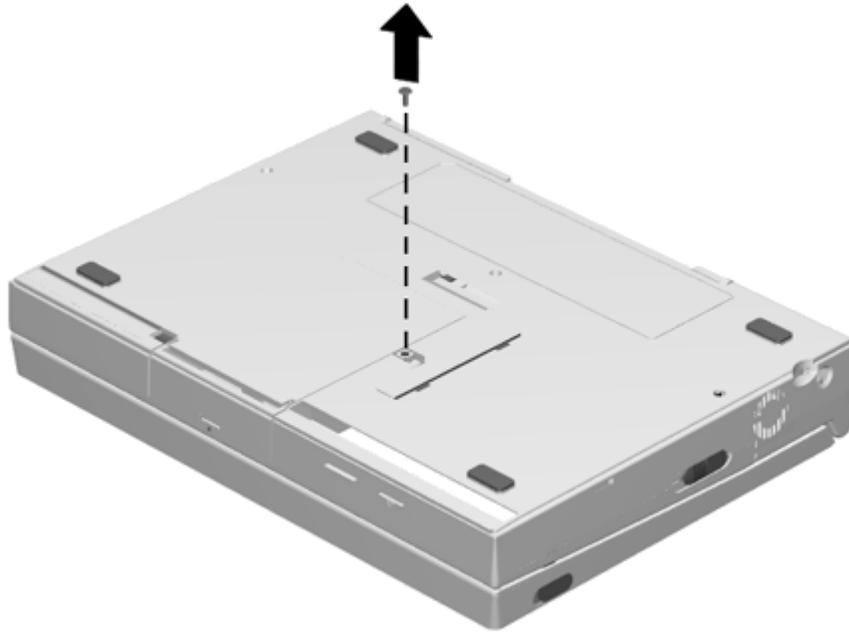
Figure 5-10. Removing the Hard Drive Security Screw

2. Open the hard drive bay door [1], and while holding the hard drive
   release actuated [2], pull on the tab [3] to remove the hard drive
   (Figure 5-11).
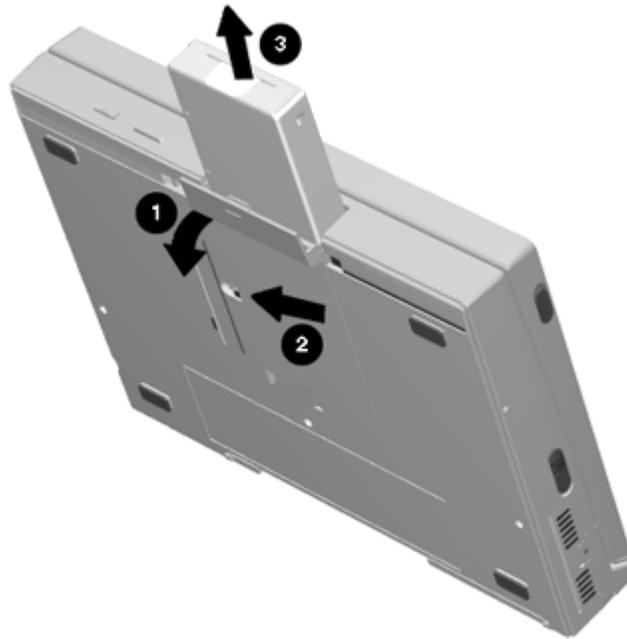
Figure 5-11. Removing the Hard Drive

Installing the Hard Drive

To install a hard drive, complete the following steps:

1. Open the hard drive bay door and insert the hard drive with the label
   facing up and the hard drive connector facing the inside of the bay.
   Make certain that the pull tab on the hard drive does not get trapped
   under the drive (Figure 5-11).

2. Push the hard drive into the bay until it is seated.

3. Close the hard drive bay door.

4. Install the security screw (optional) as shown in Figure 5-10.

5.3.6 MultiBay Device

Either a mass storage device or a battery pack can be installed in the
MultiBay. The device installed in the MultiBay should be removed prior to
performing maintenance on the computer.

Removing a Device from the MultiBay

To remove a device from the MultiBay, complete the following steps:

1. Remove the MultiBay security screw (Figure 5-12).

Figure 5-12. Removing the MultiBay Security Screw

2. Push the MultiBay device release [1] toward the front of the computer and pull the device [2] out of the MultiBay (Figure 5-13).
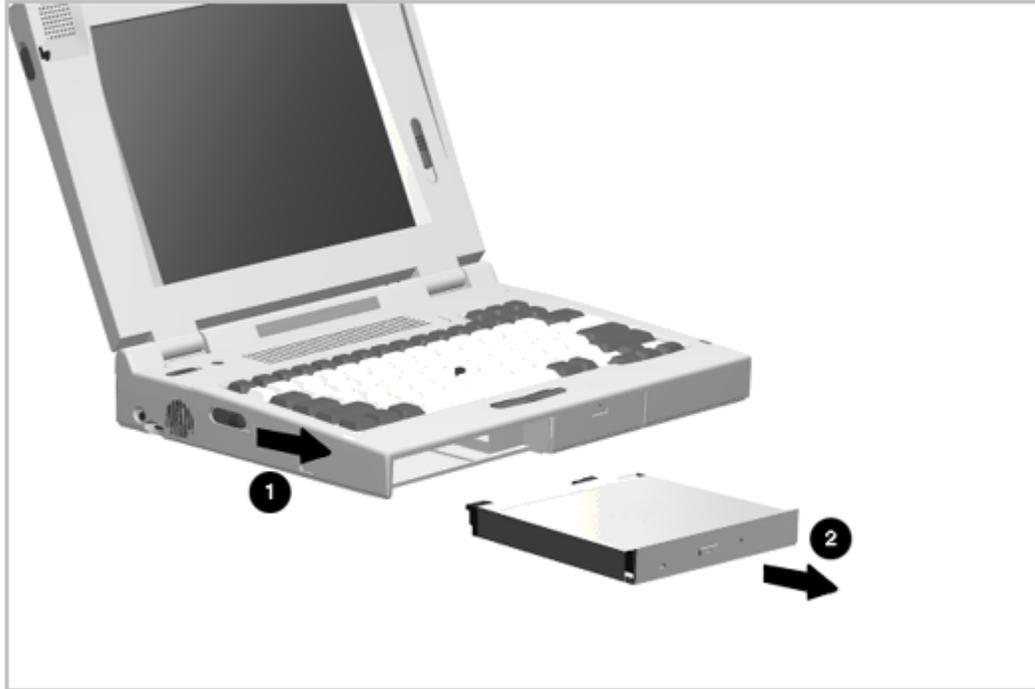
Figure 5-13. Removing a Device from the MultiBay

Installing a Device in the MultiBay

Installation of a device in the MultiBay is the reverse of the removal procedure. To install a device in the MultiBay, complete the following steps:

1. Insert the device, with the label facing up and the connector/contacts facing the inside of the bay (Figure 5-13).

2. Push firmly on the device; it will lock into place.

3. Install the security screw (optional) as shown in Figure 5-12.

5.3.7 PC Card

Compaq recommends that you remove any installed PC Cards (PCMCIA) before performing any service on the computer. To remove a PC card, complete the following steps:

1. Open the PC Card door [1] (Figure 5-14).

2. Press on the PC Card release button [2] to remove the PC Card (Figure 5-14).
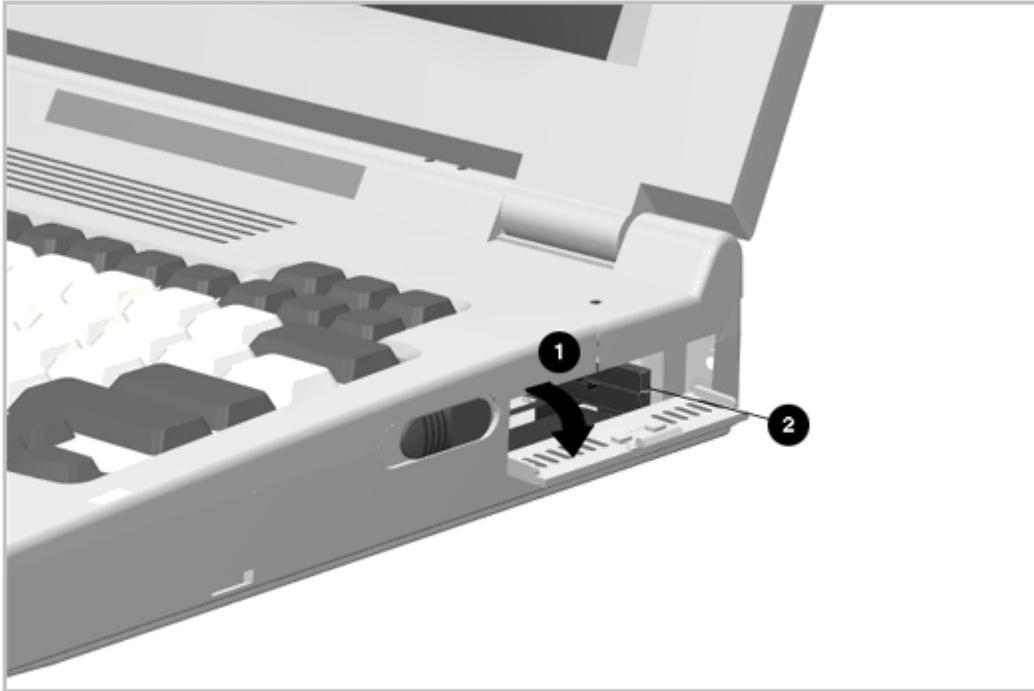
Figure 5-14. Removing a PC Card

To install a PC Card, open the PC Card door, insert the card into the
slot, and press firmly until it is seated.

Chapter 5.4 External Computer Components

This section describes the removal and replacement procedures that do not
require access to the internal components of the computer. This includes:

o Computer logo

o Computer feet

o Connector cover

o Auxiliary battery compartment door

o Memory expansion board

o EasyPoint II pointing device

o Hard drive bay door

o PC Card door

5.4.1 Computer Logo

The computer logo identifies the model of the computer. A logo for each model is included with the display assembly spare parts kit. The logo has an adhesive backing for installation. Select the appropriate logo for your computer model, remove the protective covering from the adhesive back, and install the logo as shown in Figure 5-15. The logo should be right reading when viewed from the back of the computer with the display open.

Figure 5-15. Installing the Computer Logo

5.4.2 Computer Feet

The computer feet are rectangular, adhesive-backed rubber pads. Install the feet by removing the protective covering from the adhesive back and placing the feet in their positions on the bottom of the computer as shown in Figure 5-16.
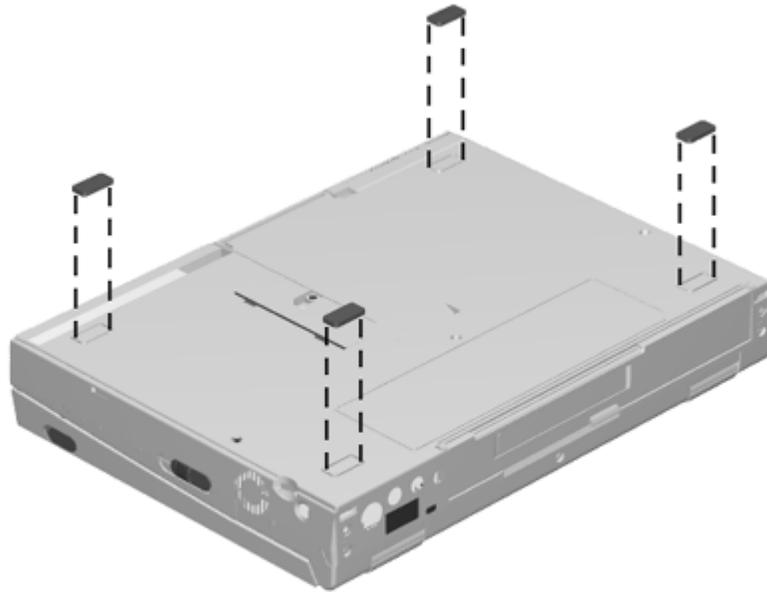
Figure 5-16. Installing the Computer Feet

5.4.3 Connector Cover

The connector cover snaps into place. To remove and replace a connector cover, complete the following steps:

1. Open the connector cover.

2. Flex the center of the cover away from the computer (Figure 5-17) until the pivots on each end of the cover disengage the pivot holes in the computer housing.
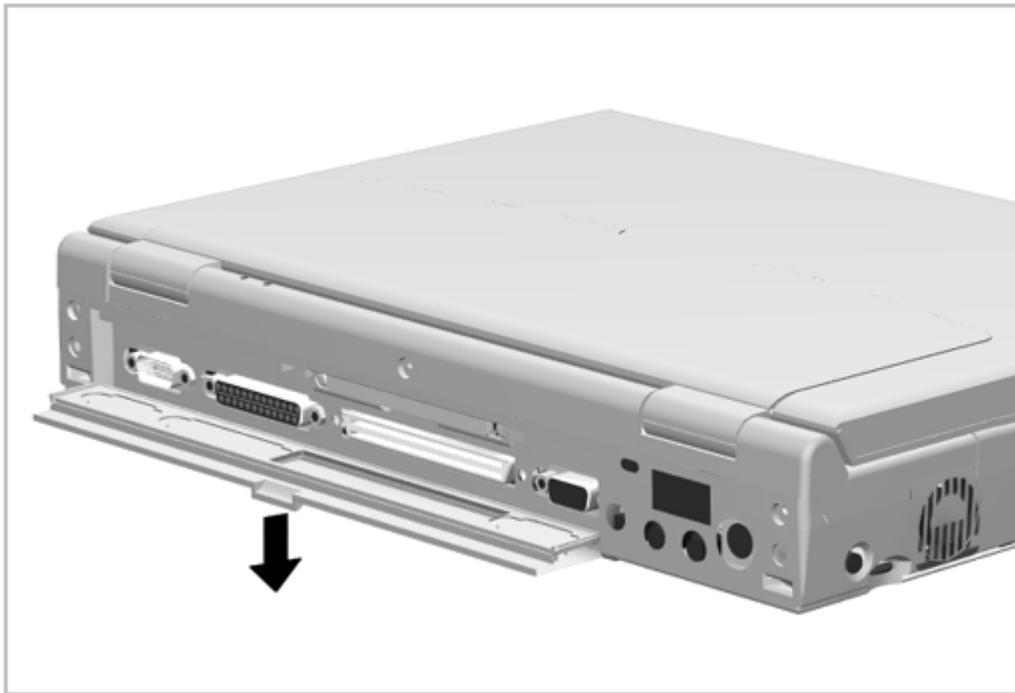
Figure 5-17. Removing the Connector Cover

Reverse this procedure to install a connector cover.

5.4.4 Auxiliary Battery Compartment Door

See Section 5.3.4 for instructions on how to remove and replace the
auxiliary battery compartment door.

5.4.5 Memory Expansion Board

The memory expansion board is installed from the outside of the computer
and is located behind the connector cover on the rear of the computer. The
assembly consists of two memory boards and a carrier, which are
preassembled and installed as a unit. To remove and replace a memory
expansion board, complete the following steps:

1. Turn off the computer and unplug the power cord.

2. Open the connector cover and loosen the two screws [1]
   (Figure 5-18). The screws are captured in the memory expansion board
   carrier and do not separate from the carrier.

Figure 5-18. Removing a Memory Module

3. Pull on the handle [2] to remove the memory expansion board from the
   computer (Figure 5-18).

Reverse the above procedure to install a memory expansion board.

IMPORTANT: Run Computer Setup after installing a memory expansion board.

5.4.6 EasyPoint II Pointing Device

The EasyPoint II pointing device consists of a rubber cap [1]. If the
rubber cap needs to be replaced, grasp the rubber cap with your thumb and
index finger and lift it out. Install a new cap by pushing it on
(Figure 5-19).
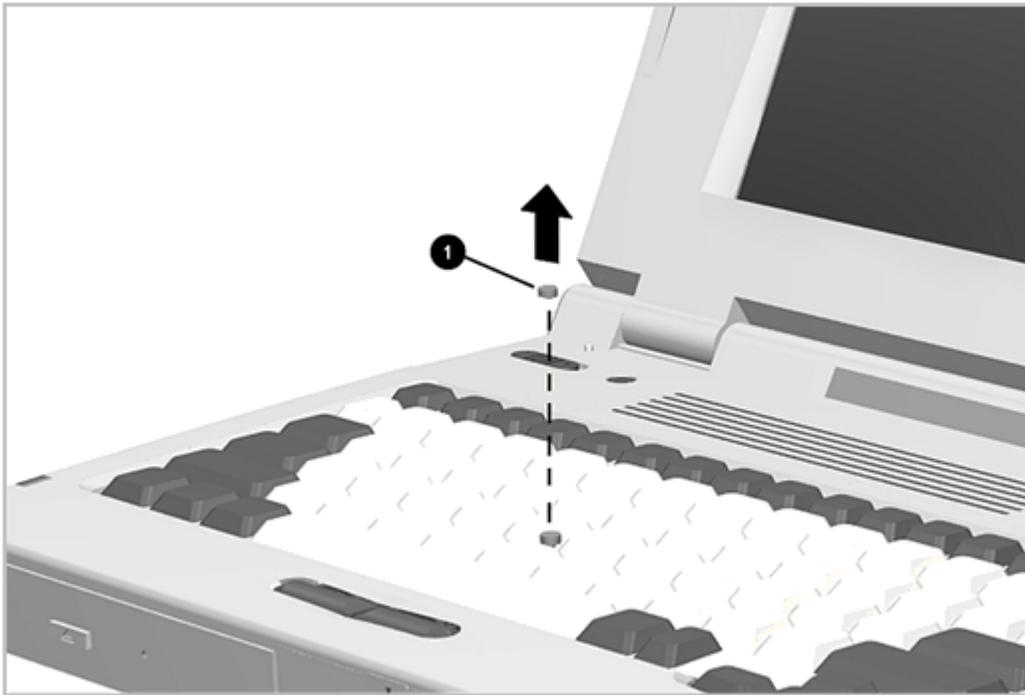
Figure 5-19. Removing and Installing the EasyPoint II Pointing Device

5.4.7 Hard Drive Bay Door

The hard drive bay door snaps into place. To remove the hard drive bay door, complete the following steps:

1. Position the computer on a tabletop so the front edge of the computer is just off the edge of the table (Figure 5-20).
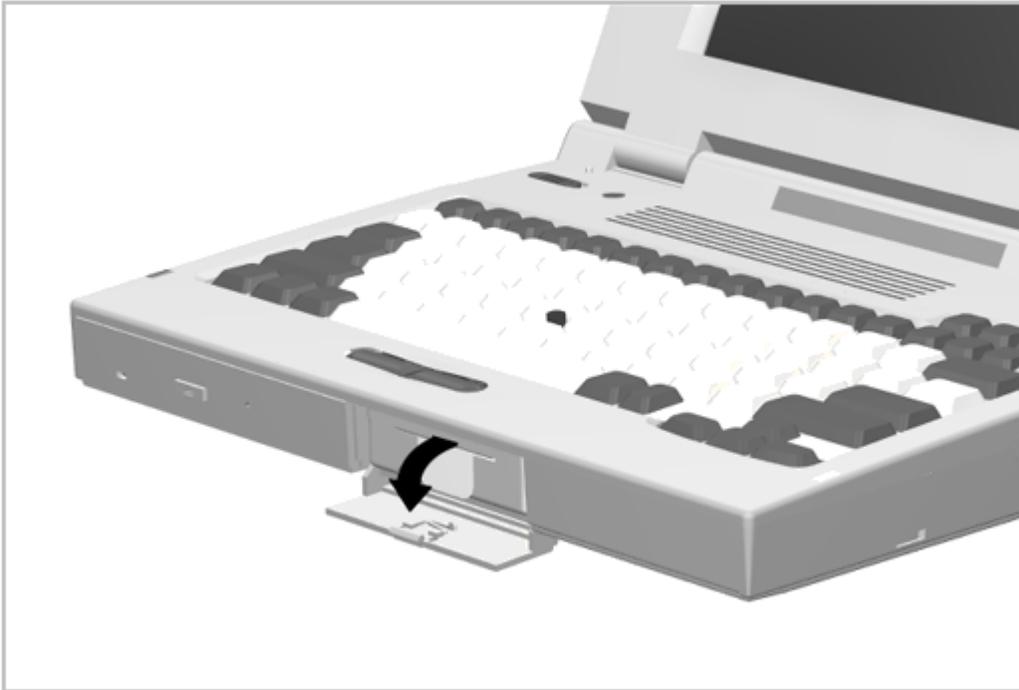
Figure 5-20. Removing the Hard Drive Bay Door

2. Open the hard drive bay door until you feel resistance, then continue
   to open the door (Figure 5-20) until the door is released.

To install the hard drive door, orient the door to 90 degrees from its
closed position and snap it onto the pivot studs on the computer.

5.4.8 PC Card Door

The PC Card door snaps into place. To remove and replace the PC Card door,
complete the following steps:

1. Open the PC Card door (Figure 5-21).
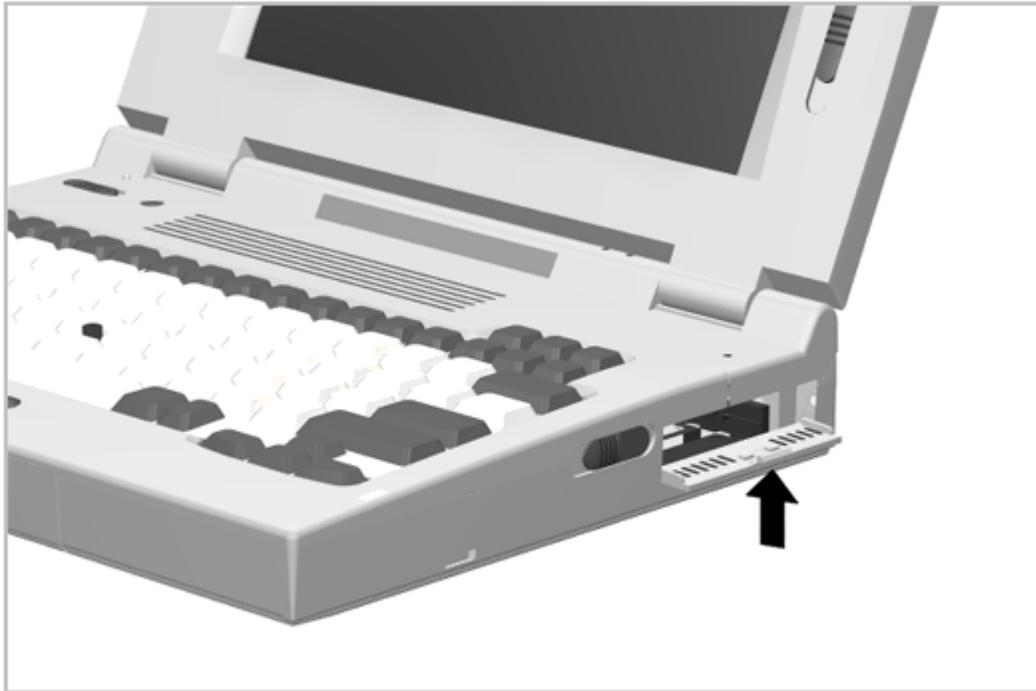
Figure 5-21. Removing the PC Card Door

2. Flex the center of the door up until the pivots on each end of the door
   disengage the pivot holes in the computer housing (Figure 5-21).

Reverse this procedure to install the PC Card door.

Chapter 5.5 CPU Cover Assembly

The CPU cover assembly must be removed to gain access to any of the
interior components of the computer, and it is the first component that
has to be removed to gain access to the interior components. Maintenance
of the CPU cover assembly includes replacement of the following:

o CPU cover assembly

o Power switch actuator

o Standby (Suspend) button

o Display switch button

Additionally, the integrated microphone can be accessed for service when
the CPU cover is removed.

5.5.1 CPU Cover Assembly

To remove and replace the CPU cover assembly, complete the following steps:

1. Prepare the computer for disassembly as described in Section 5.3.

2. Remove the three screws from the back of the computer (Figure 5-22).
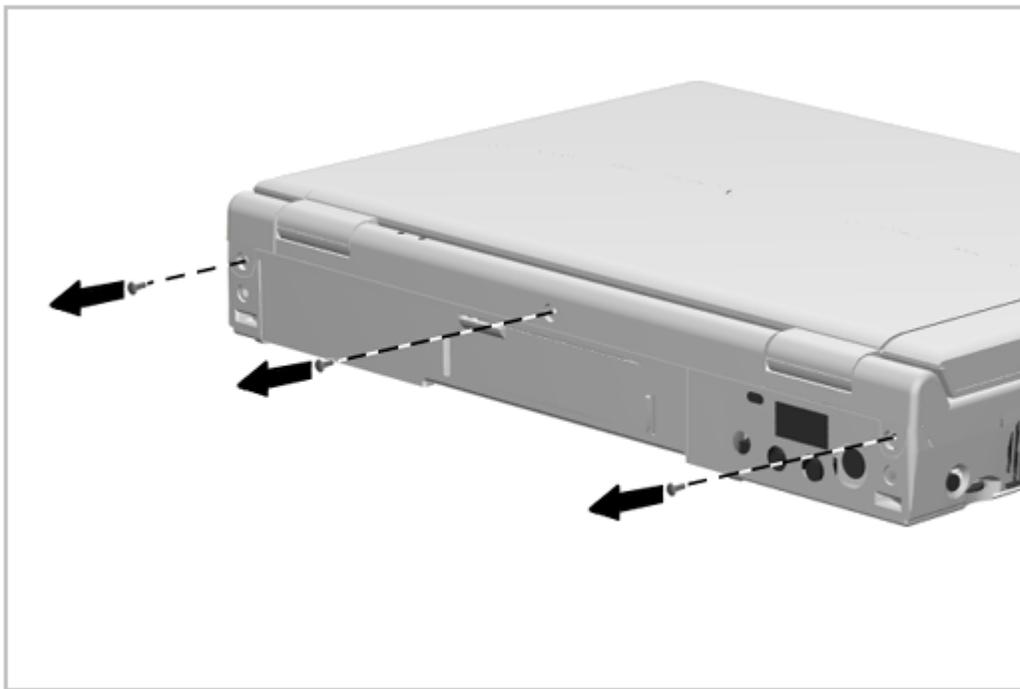
Figure 5-22. Removing the CPU Cover Screws

3. Open the display panel and tilt the display panel all the way back
   (Figure 5-23).

Figure 5-23. Removing the CPU Cover

4. Tilt the CPU cover forward and out of the computer (Figure 5-23).

Reverse the above procedure to install the CPU cover assembly.

IMPORTANT: A set of warning labels is included with each CPU cover
          assembly spare parts kit. Select a label with the language that
          matches the keyboard language and install the label in the
          upper right corner of the cover. This label contains a warning
          message to prevent physical discomfort and harm. Installation
          of this label is essential.

5.5.2 Power Switch Actuator

To remove the power switch actuator, complete the following steps:

1. Remove the CPU cover as described in Section 5.5.1.

2. From the bottom side of the CPU cover, squeeze the tabs and push the
   switch actuator and its installed spring out of the cover
   (Figure 5-24).
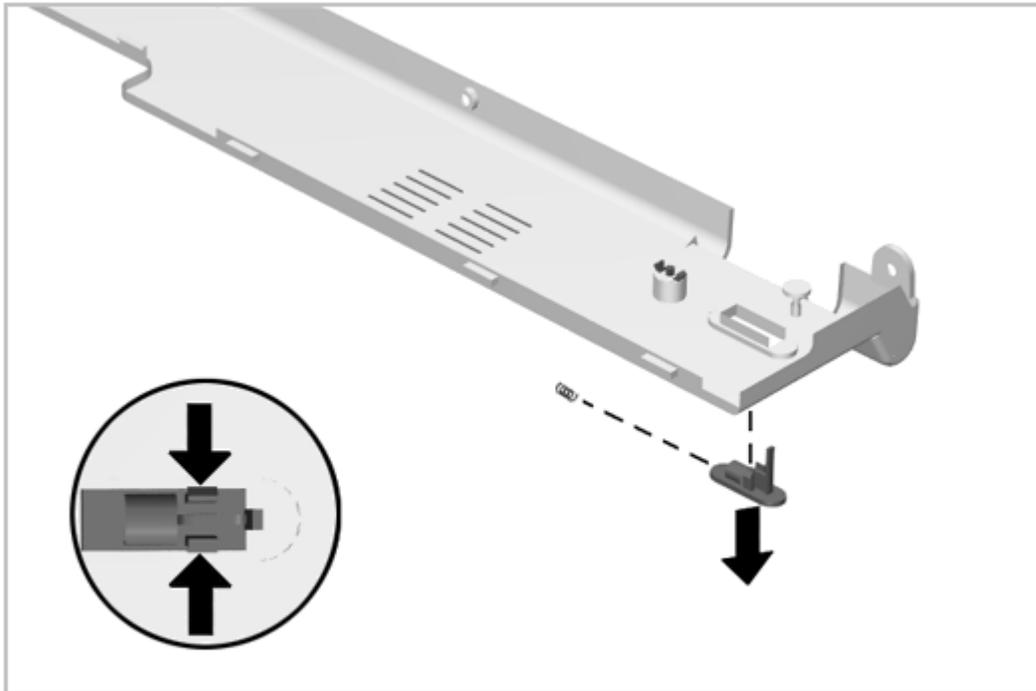
Figure 5-24. Removing the Power Switch Actuator

To install, simply snap the power switch actuator, with spring installed, into place.

5.5.3 Standby (Suspend) Button

To remove the standby (suspend) button, complete the following steps:

1. Remove the CPU cover as described in Section 5.5.1.

2. From the bottom side of the CPU cover, squeeze the tabs and push the button out of the cover (Figure 5-25). Note the spring associated with this button and take care not to lose it.
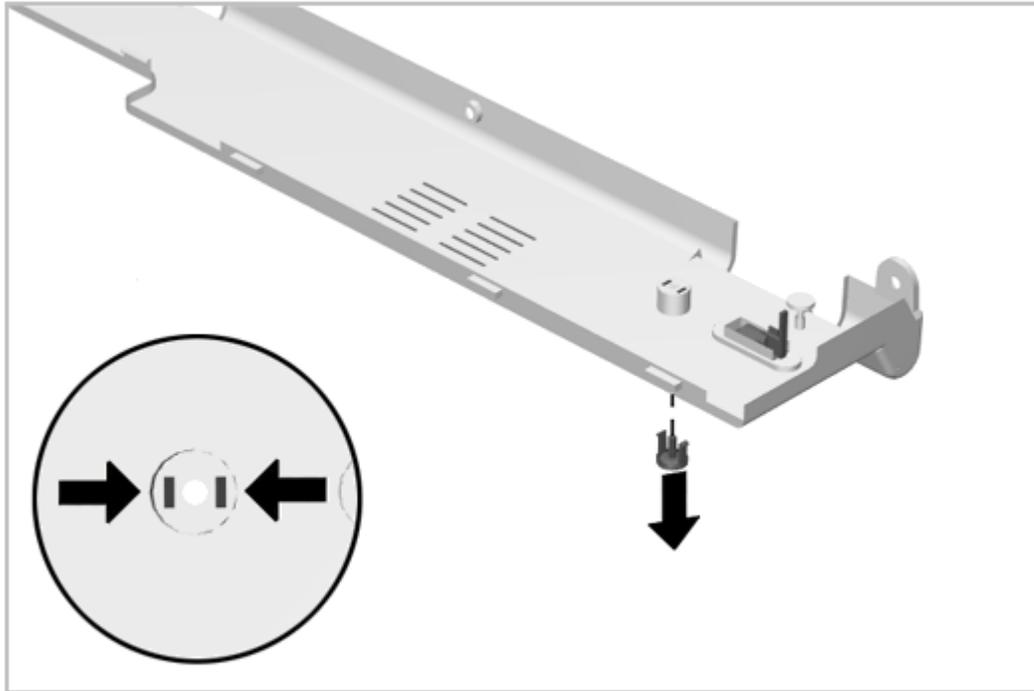
Figure 5-25. Removing the Standby (Suspend) Button

To install, simply snap the standby (suspend) button into place. To avoid
losing the spring, this task is better performed with the CPU cover
inverted.

5.5.4 Display Switch Button

The display switch button is installed with a snap action. To remove,
simply pull it out of its mounting hole (Figure 5-26).
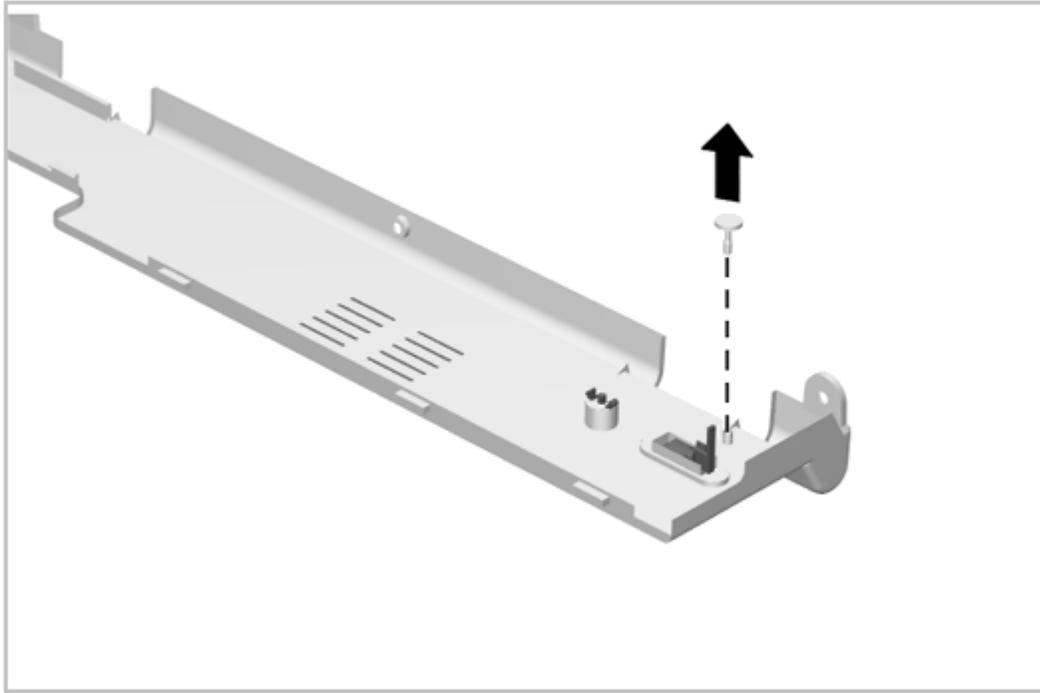
Figure 5-26. Removing the Display Switch Button

To install a display switch button, snap it into place.

Chapter 5.6 Microphone

With the CPU cover removed, the microphone is readily accessible on the
right-hand side of the computer above the keyboard. The microphone is
seated in a boot that is then installed in the keyboard plastic. To remove
and replace the microphone, complete the following steps:

1. Remove the CPU cover as described in Section 5.5.1.

2. Disconnect the microphone cable (Figure 5-27).
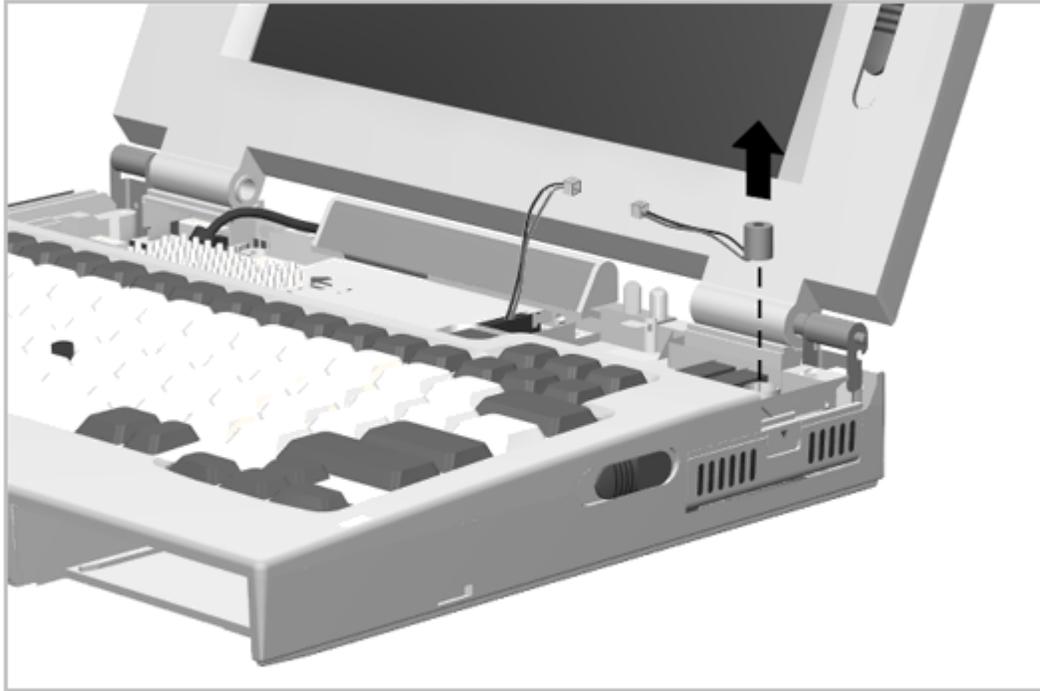
Figure 5-27. Removing the Microphone

3. Lift the microphone and its boot out of the computer (Figure 5-27).

NOTE: The microphone extension cable cannot be properly accessed for
      service until the processor board is removed. See Section 5.11 for
      details on the extension cable.

To install a microphone, reverse the above procedure.

Chapter 5.7 Status Panel

The CPU cover must be removed to gain access to the status panel. To
remove the status panel assembly, complete the following steps:

1. Prepare the computer for disassembly as described in Section 5.3.

2. Remove the CPU cover as described in Section 5.5.1.

IMPORTANT: Note the routing of the status panel cable before disturbing
           the cable. It is very important that this cable be routed
           properly at reassembly.

3. With the display open and tilted all the way back, disconnect the
   status panel cable [1] (Figure 5-28).
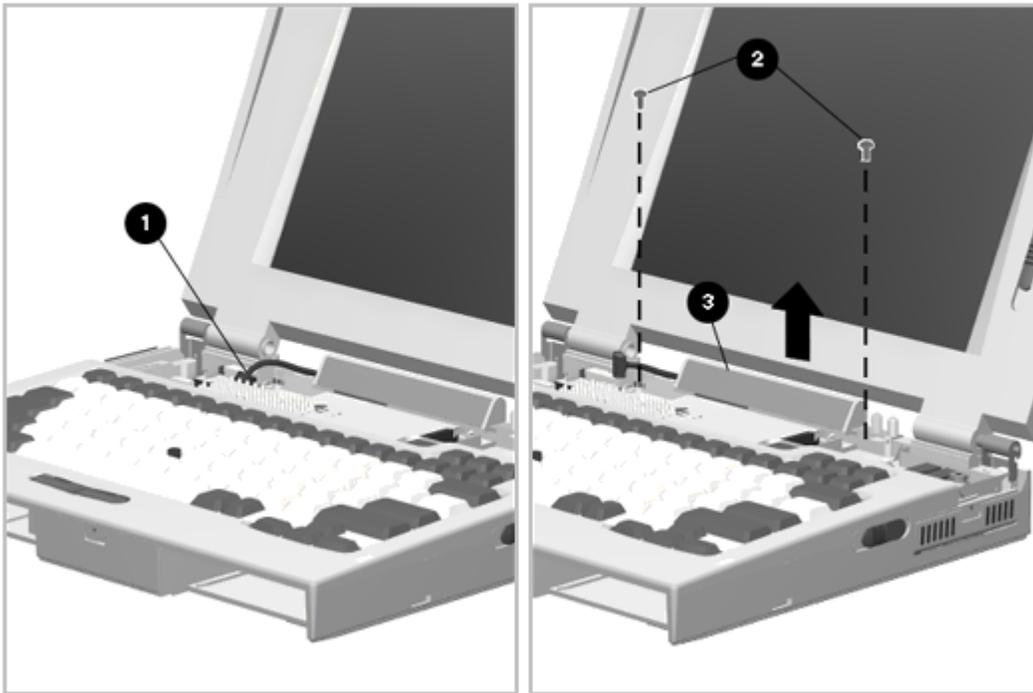
Figure 5-28. Removing the Status Panel

4. Remove the two status panel screws [2] (Figure 5-28).

5. Lift the status panel [3] out of the computer.

Reverse the above procedure to install the status panel, taking care to
route the cable properly.

Chapter 5.8 Display Assembly

Maintenance of the display assembly includes replacement of the following:

o Display assembly

o Display bezel with speakers

o Latch assemblies

o Clutch assemblies

o Brightness/contrast control actuators

o Clutch cradles

All of these procedures require removal of the CPU cover and the display assembly.

5.8.1 Removing and Installing the Display Assembly

To remove and install the display assembly, complete the following steps:

1. Prepare the computer for disassembly as described in Section 5.3.

2. Remove the CPU cover as described in Section 5.5.1.

3. Disconnect the display cables: one connector [4] and grounding lug [5] on the right, two connectors [2] [3] and one grounding lug [1] on the left (Figure 5-29).

Figure 5-29. Disconnecting the Display Cables

4. Remove the two screws [1] securing the display assembly to the base assembly (Figure 5-30), and separate the display assembly from the base assembly [2].

Figure 5-30. Removing the Display Assembly

Reverse the above procedure to install the display assembly. Install the appropriate logo to match the computer model (Section 5.4.1).

NOTE: It is important that these instructions be followed when replacement of any part requires removal of the display assembly:

Slide the display assembly back in place and replace all screws. The screws must be fully tightened to ensure that they do not touch the expansion base sensor located near the left hinge. Failure to properly seat the screws may prevent the unit from booting up.

IMPORTANT: When installing the display, take care not to damage the docking sensor switch actuator located in the left rear corner of the computer. Also, route the display and speaker cables very carefully to avoid interference with the display and power switches.

5.8.2 Removing and Installing the Display Bezel

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> WARNING <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

To reduce the risk of electric shock from contact with parts in the display enclosure, ensure that all power sources to the display panel are removed prior to opening the display bezel.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

To remove the display bezel, complete the following steps:

1. Remove the display assembly as described in Section 5.8.1.

2. Remove the screw covers and screws (Figure 5-31).

NOTE: The upper and lower screw covers are not the same.

Figure 5-31. Removing the Display Bezel Screw Covers and Screws

3. Using a case tool, begin at the top and pry the display bezel loose
   (Figure 5-32). Continue separating the bezel from the case along the
   two sides and then slide the bezel off the bottom of the display
   assembly. Locations of the bezel clips are indicated by arrows in
   Figure 5-32. Note that the speakers are permanently attached to the
   bezel and come off with it.

Figure 5-32. Removing the Display Bezel

IMPORTANT: Note the routing of the display cables to ensure proper routing
          at reassembly.

Reverse the above procedure to install the display bezel, taking care to
properly align the brightness/contrast control(s) with their switches.

5.8.3 Removing and Installing the Latches

To remove the latches, complete the following steps:

1. Remove the display assembly as described in Section 5.8.1.

2. Remove the display bezel as described in Section 5.8.2.

3. Using a small flat-blade screwdriver, apply pressure to the latch
   actuator tab [1] to allow the actuator to be removed (Figure 5-33).
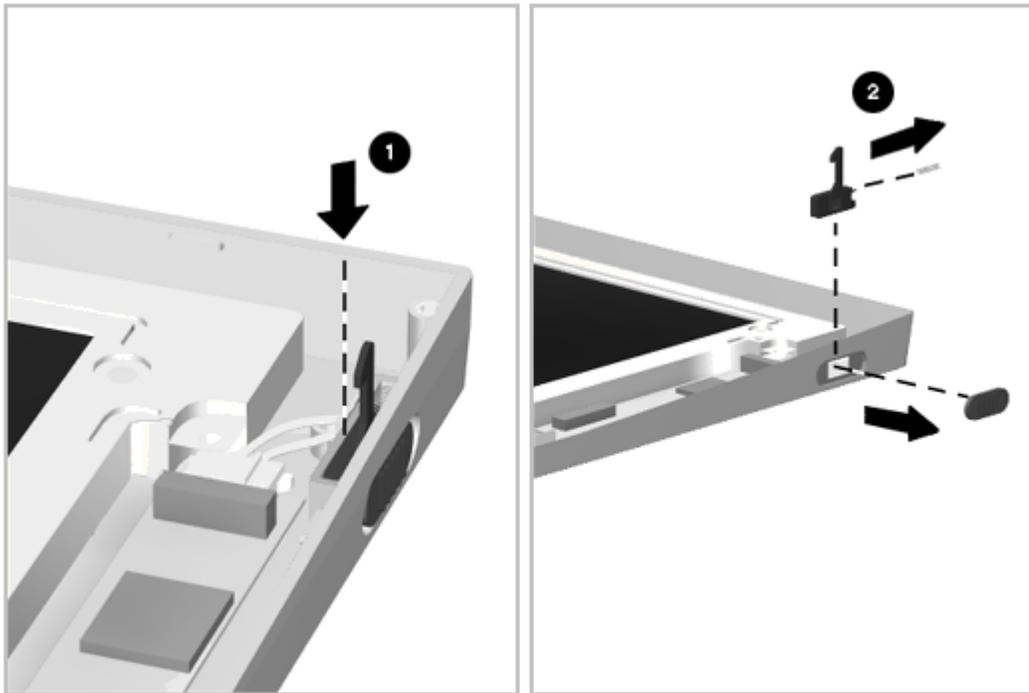
Figure 5-33. Removing the Latch Assembly

4. Lift out the latch [2] and its attached spring (Figure 5-33).

Reverse the above procedure to install a latch assembly.

5.8.4 Removing and Installing the Clutch Assembly

To remove a clutch assembly, complete the following steps:

1. Remove the display assembly as described in Section 5.8.1.

2. Remove the display bezel as described in Section 5.8.2.

3. Remove the screws holding the clutch assembly and bracket to the
   display housing (Figure 5-34), and remove the clutch assembly and
   bracket.
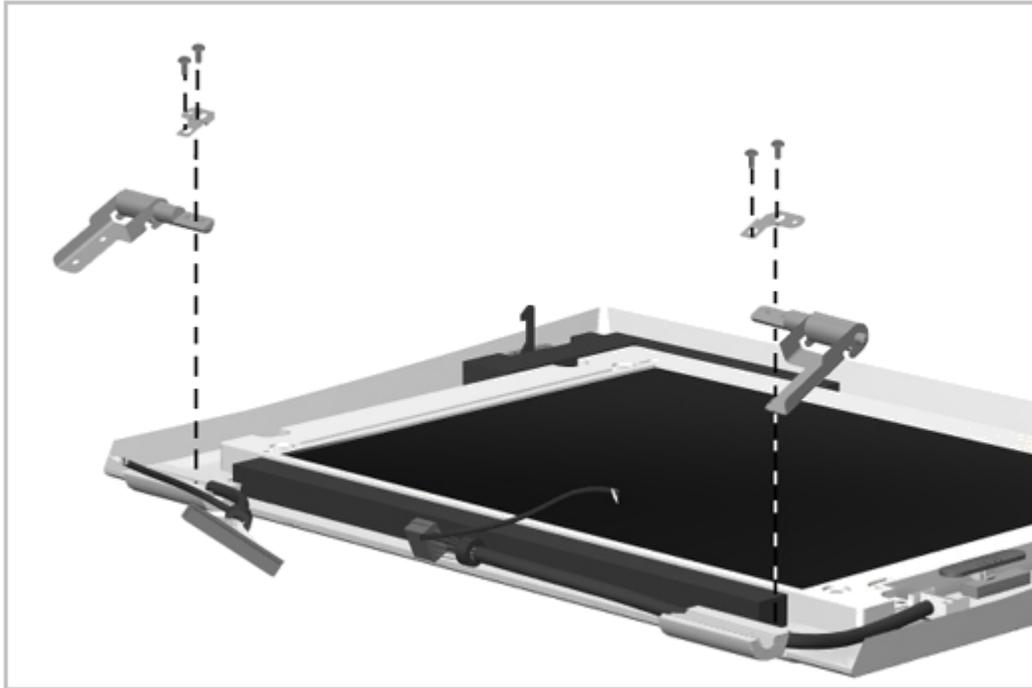
Figure 5-34. Removing the Clutch Assembly and Bracket

Reverse the above procedure to install a clutch assembly and bracket.

5.8.5 Brightness/Contrast Control Actuator

To remove a brightness/contrast control actuator, complete the following steps:

1. Remove the display assembly as described in Section 5.8.1.

2. Remove the display bezel as described in Section 5.8.2.

3. Squeeze the tabs on the back of the actuator (Figure 5-35) and let it drop out.
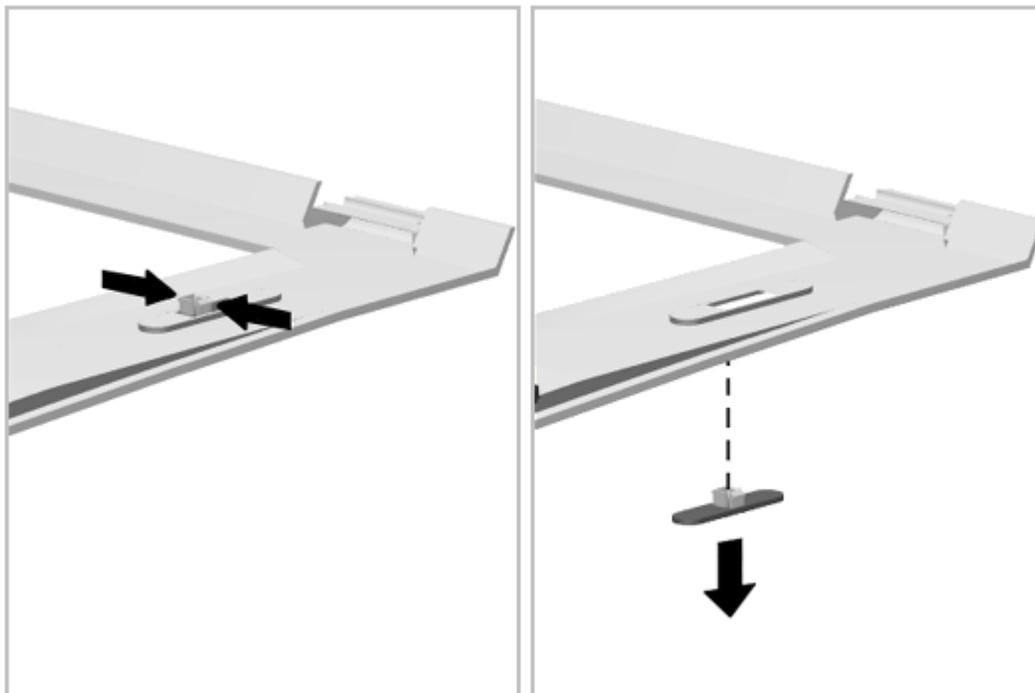
Figure 5-35. Removing a Brightness/Contrast Control Actuator

To install a brightness/contrast control actuator, simply snap it into
place.

IMPORTANT: When replacing the display bezel onto the display panel, make
sure the seat in the brightness/contrast control actuator is
aligned with the tab on the brightness/contrast switch. An
alternate installation procedure is to install the bezel and
then install the actuators.

5.8.6 Removing and Installing the Clutch Cradles

The left clutch cradle is held in place with one screw and is keyed to
provide proper installation. The right clutch cradle uses no screws for
installation and simply lifts out of the computer. To remove the clutch
cradles, complete the following steps:

1. Remove the display assembly (Section 5.8.1).

2. Remove the left cradle screw and lift the cradle out (Figure 5-36).
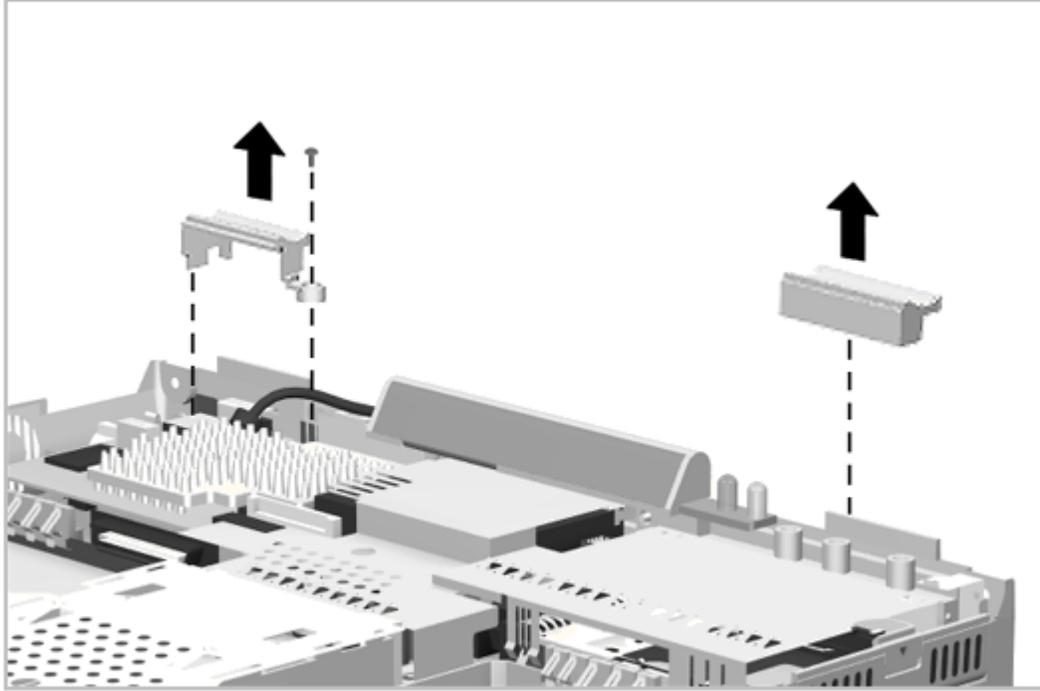
Figure 5-36. Removing the Clutch Cradles

3. Lift the right cradle out of the computer (Figure 5-36).

Reverse the above procedure to install the clutch cradles.

Chapter 5.9 Keyboard Assembly

Maintenance of the keyboard assembly includes removal and replacement of
the following:

o Keyboard assembly

o EasyPoint II controller

o Battery eject mechanism

o MultiBay device eject mechanism

o Hard drive latch

5.9.1 Removing and Installing the Keyboard

To remove the keyboard, complete the following steps:

1. Remove the CPU cover as described in Section 5.5.1.

2. Remove the keyboard screws (Figure 5-37).
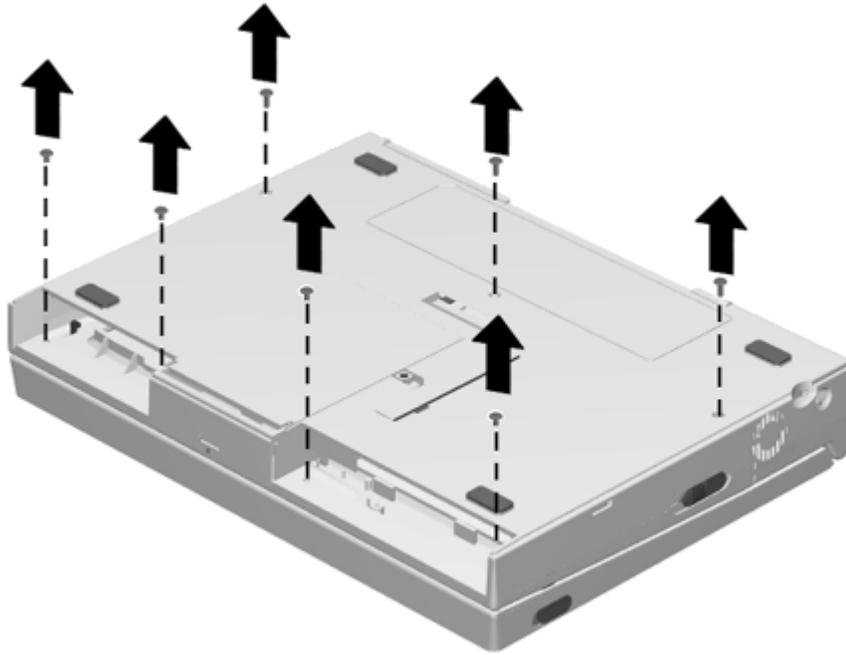
Figure 5-37. Removing the Keyboard Screws

3. Remove the screws [1] from the rear corners of the keyboard
   (Figure 5-38). Note that ground lugs are attached by these screws.
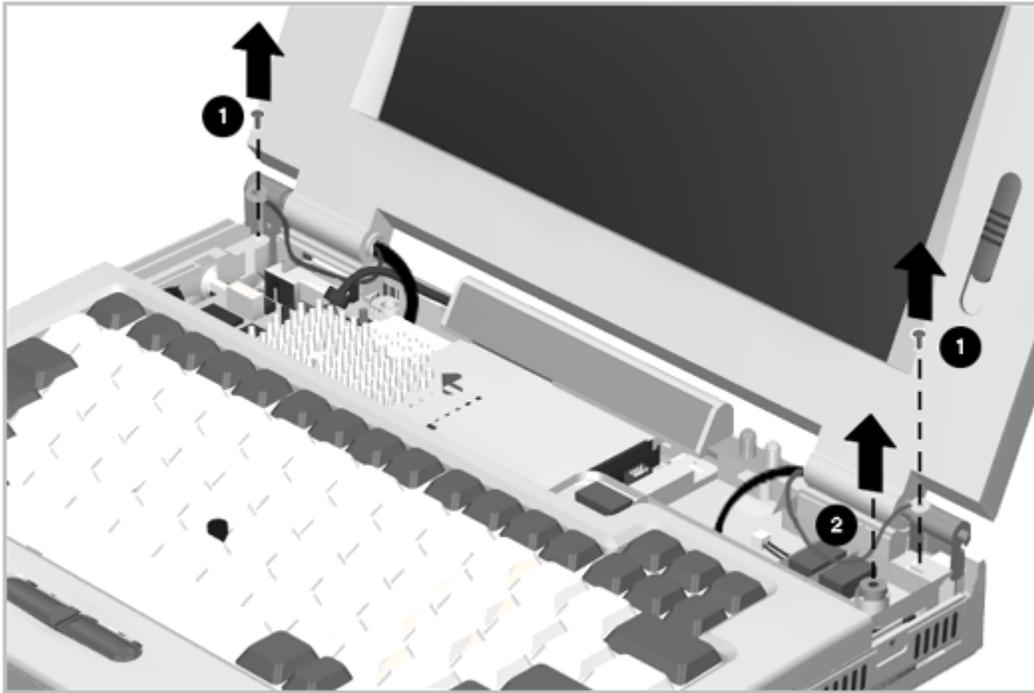
Figure 5-38. Removing the Keyboard Screws and Microphone

4. Remove the microphone [2] (Figure 5-38). You can leave it attached to its extension cable.

5. Separate the keyboard from the base and shift it slightly to gain better access to the keyboard ZIF connector [1] (Figure 5-39), then disconnect the ZIF connector.
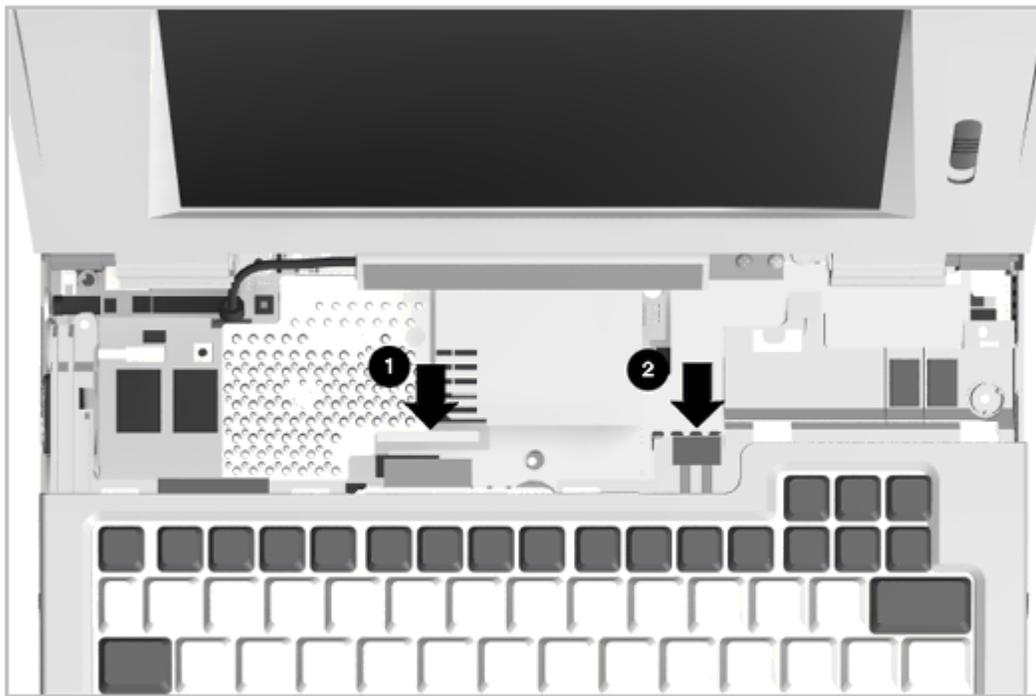
Figure 5-39. Disconnecting the Keyboard

6. Disconnect the EasyPoint II controller cable [2] from the system board (Figure 5-39).

7. Lift the keyboard out.

Reverse this procedure to install the keyboard.

NOTE: Be sure to connect the ground lugs at the rear of the keyboard.

5.9.2 Removing and Installing the EasyPoint II Controller

To remove the EasyPoint II controller, complete the following steps:

1. Remove the keyboard as described in Section 5.9.1.

2. Remove the two screws from the EasyPoint II controller (Figure 5-40).
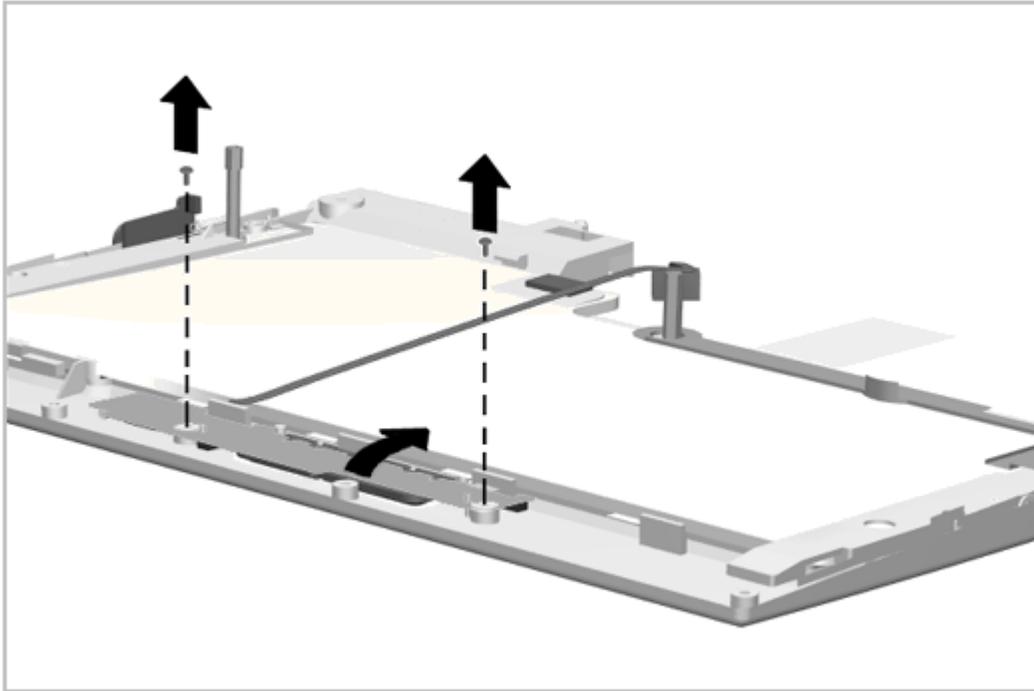
Figure 5-40. Removing the EasyPoint II Controller

3. Disconnect the cable from the ZIF connector on the EasyPoint II
   Controller (Figure 5-41). The ZIF connector is located on the back side
   of the controller board.
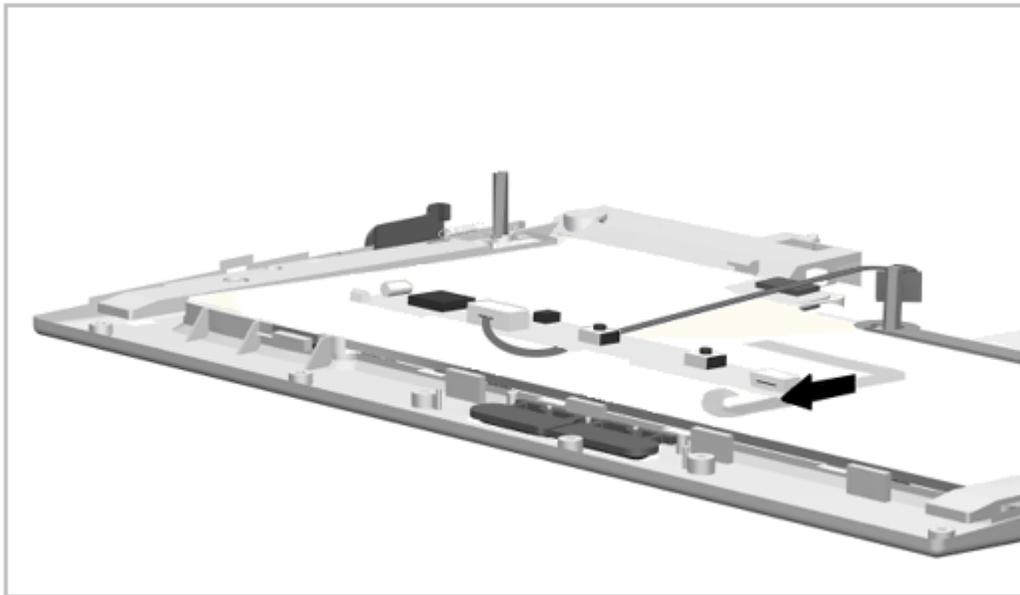
Figure 5-41. Disconnecting the EasyPoint II Controller

NOTE: Observe the dressing of the EasyPoint II controller cables. It may
      be necessary to use adhesive tape to maintain the cables in their
      proper orientations.

Reverse the above procedure to install the EasyPoint II controller.

5.9.3 Removing and Installing the Battery Release Assembly

To remove the battery release assembly, complete the following steps:

1. Remove the keyboard as described in Section 5.9.1.

2. Remove the two screws [1] from the release holder [3] (Figure 5-42).
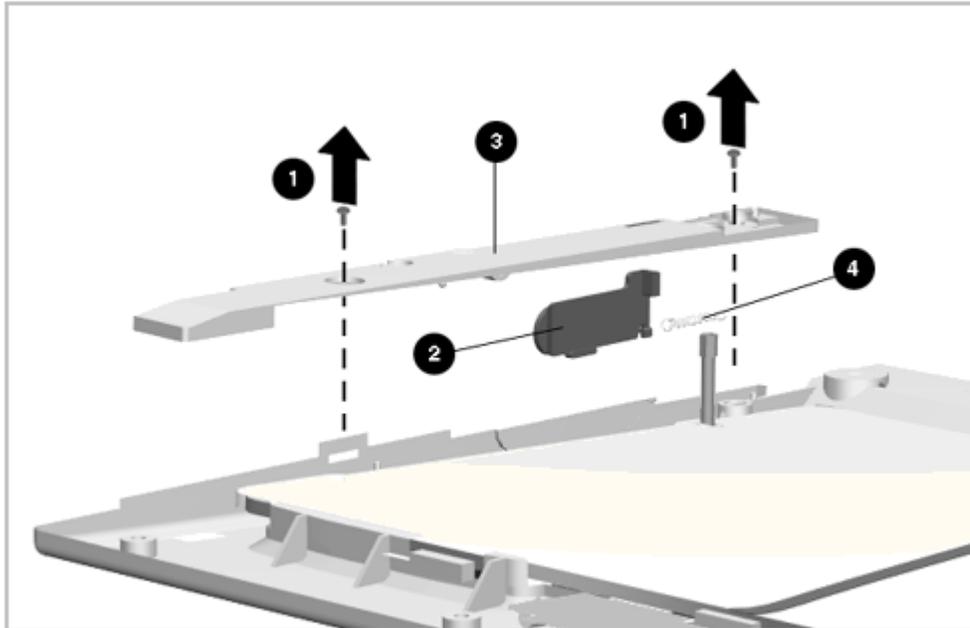
Figure 5-42. Removing the Battery Release Assembly

3. The release holder, spring, and latch are installed as an assembly.
   Lift out the release holder [3] (Figure 5-42). The battery release [2]
   is attached to the release holder with its spring [4].

Reverse the above procedure to install the battery release assembly. Use
the locating pins adjacent to each mounting hole to locate the release
holder properly.

NOTE: At reassembly, make certain that the spring on the battery release
      is not trapped between the release holder and side plastic. The
      spring should be below the holder (Figure 5-43).
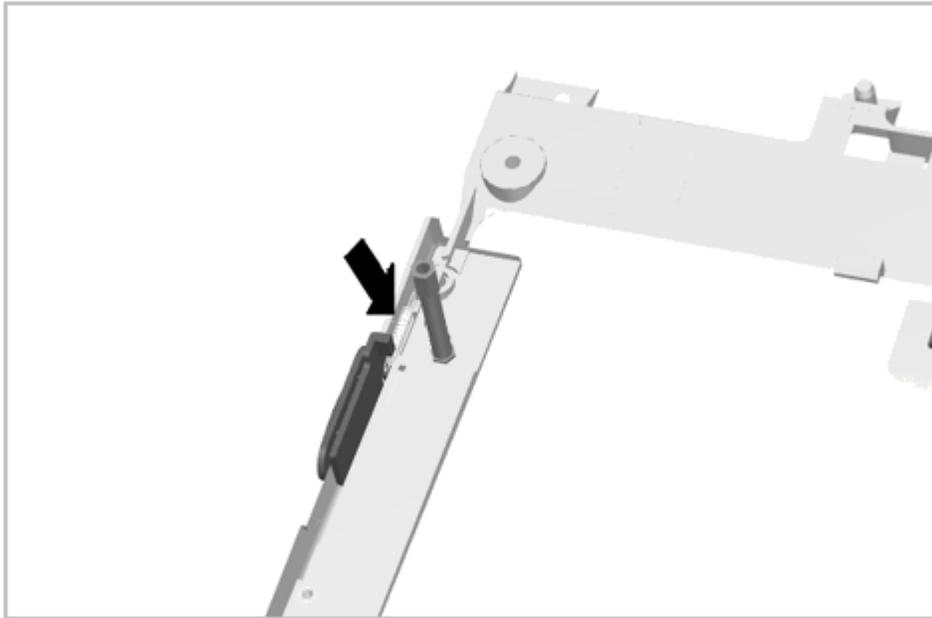
Figure 5-43. Installing the Battery Release Assembly

5.9.4 Removing and Installing the MultiBay Release Assembly

To remove the MultiBay release assembly, complete the following steps:

1. Remove the keyboard as described in Section 5.9.1.

2. Remove the standoff [1] from the CD-ROM eject bar [2] and lift out the eject bar (Figure 5-44).
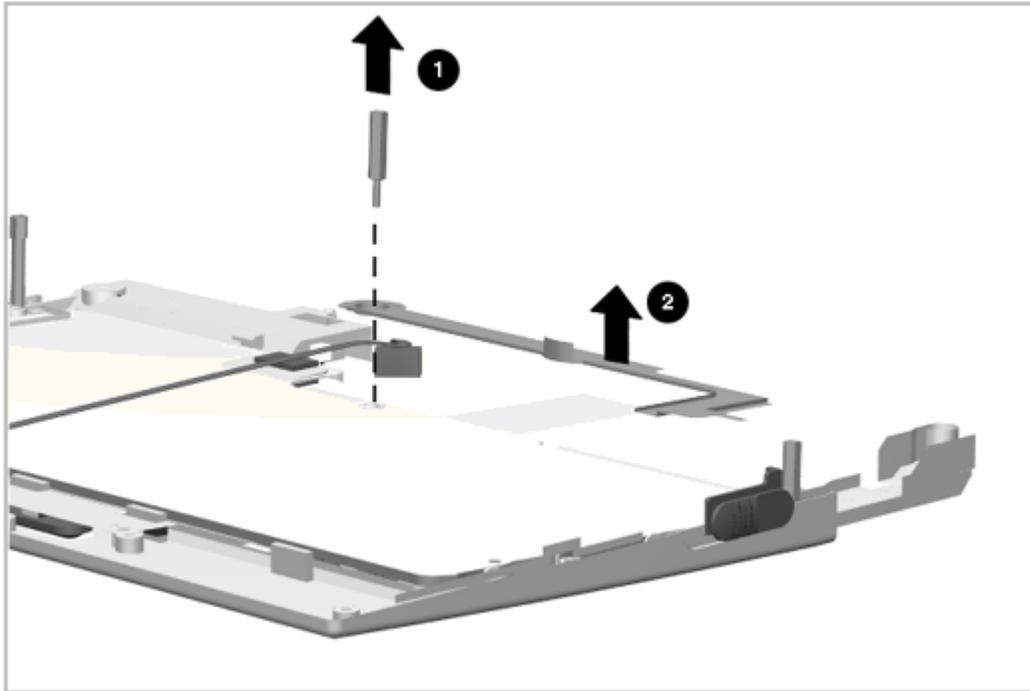
Figure 5-44. Removing the CD-ROM Eject Bar and Standoff

3. Remove the standoff and screw from the release holder (Figure 5-45).
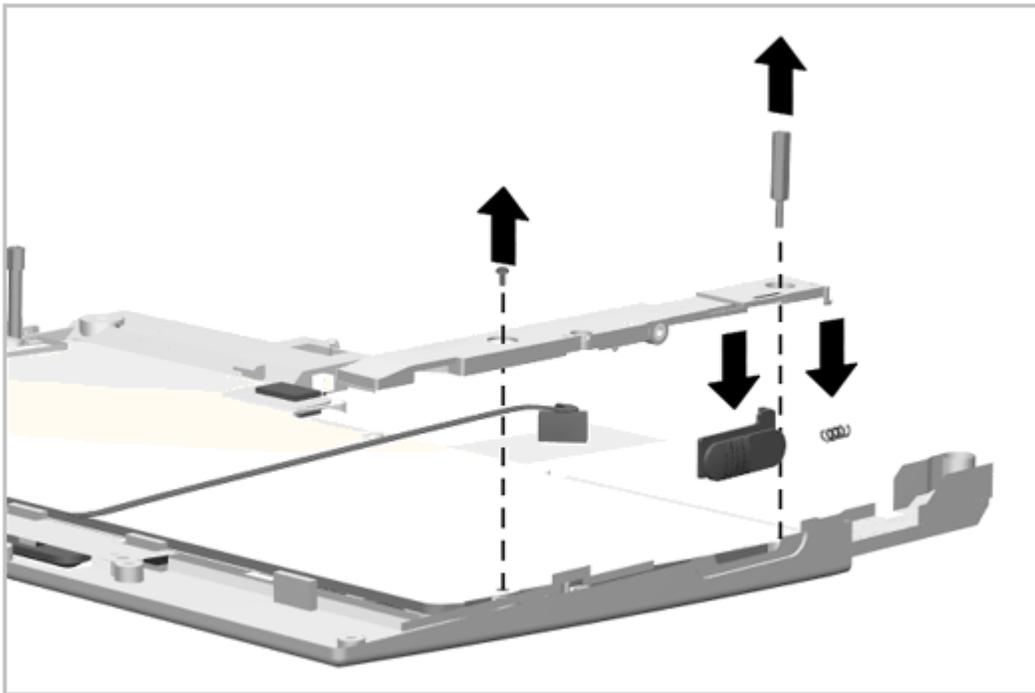
Figure 5-45. Removing the MultiBay Release Assembly

4. Lift out the release holder (Figure 5-45). The release is attached to
   the holder with its spring.

The release holder, spring and latch are installed as an assembly.
Reverse the above procedure to install the MultiBay release assembly. Use
the locating pins adjacent to each mounting hole to locate the release
holder properly.

NOTE: At reassembly, make certain that the spring on the MultiBay release
      is not trapped between the release holder and side plastic. The
      spring should be below the holder. (Figure 5-46).
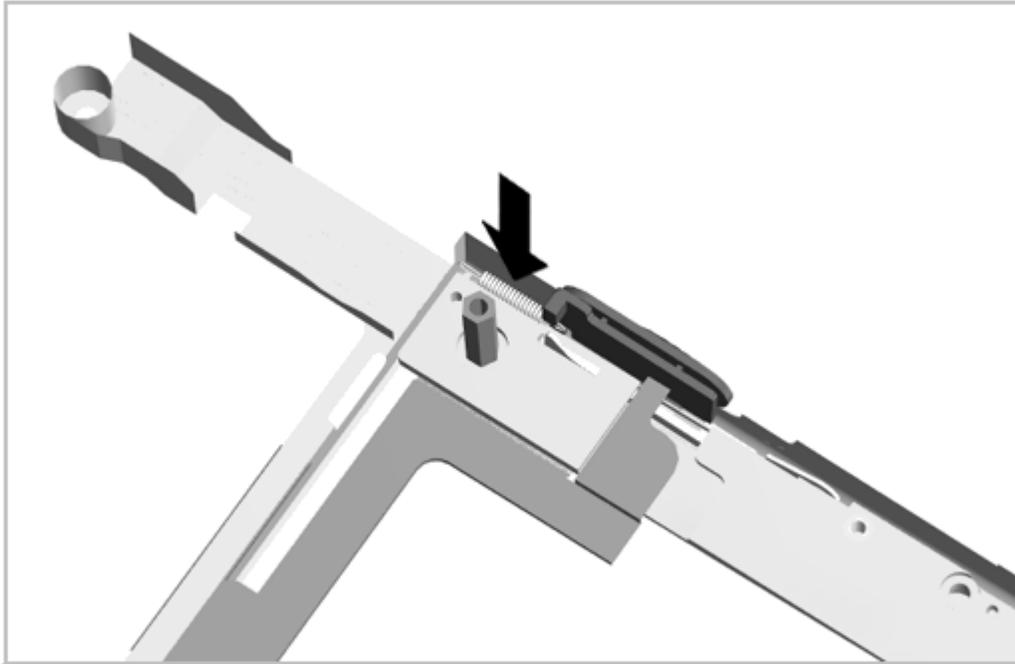
Figure 5-46. Installing the MultiBay Release Assembly

5.9.5 Removing and Installing the Hard Drive Latch

The hard drive latch assembly consists of the hard drive release, latch, and spring. It is held in place with one screw. To remove and replace the hard drive latch, complete the following steps:

1. Remove the keyboard as described in Section 5.9.1.

2. Remove the hard drive security screw (Figure 5-47)
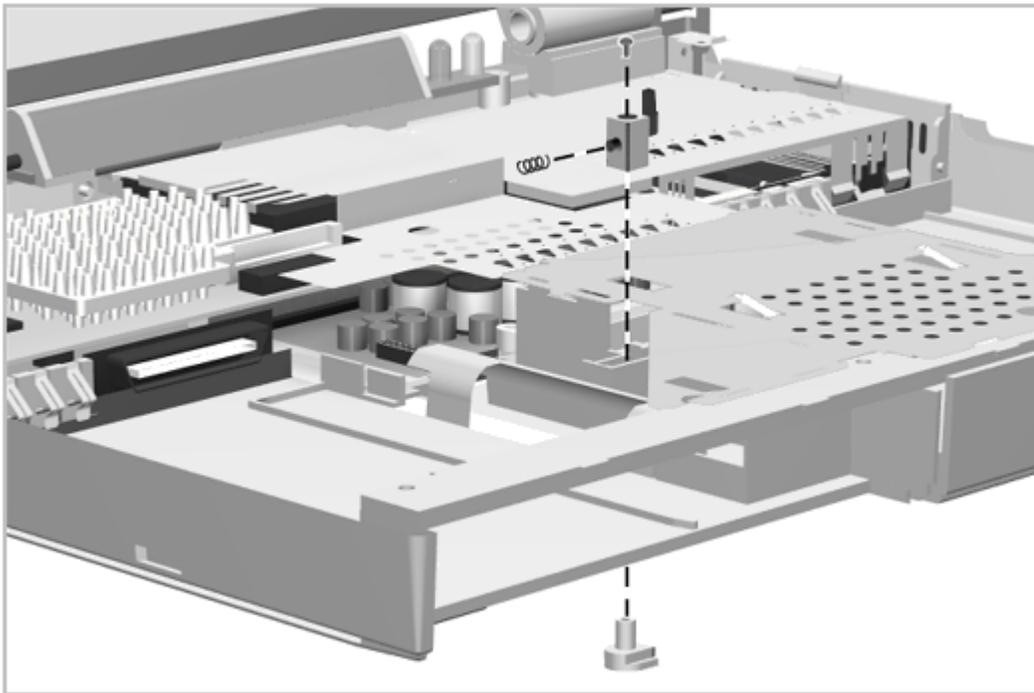
Figure 5-47. Removing the Hard Drive Latch

3. Remove the latch screw as shown in Figure 5-47. The release drops out but the spring holds the latch in place. Use forceps or needle-nose pliers to remove the latch and spring.

Chapter 5.10 Fan

The cooling fan is mounted at the air vent on the left side of the computer and is plugged into the system board. After removing the CPU cover, the fan is easily removed by disconnecting the fan cable from the system board and lifting the fan out (Figure 5-48). To remove the fan, complete the following steps:

1. Remove the CPU cover (Section 5.5).

2. Remove the keyboard (Section 5.9.1).

3. Disconnect the fan cable from the system board (Figure 5-48).
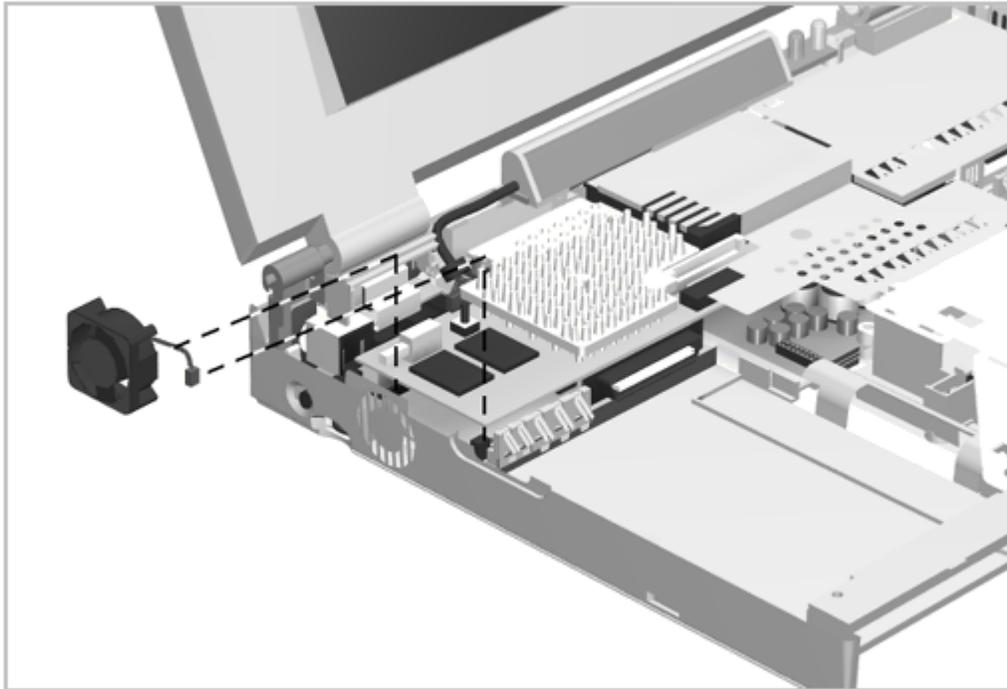
Figure 5-48. Removing the Fan

4. Lift the fan out of the computer.

Reverse the above procedure to install a fan. Make certain the fan is properly oriented with the label on top and the airflow arrow pointing out of the computer.

Chapter 5.11 Processor Board

To remove the processor board, complete the following steps:

1. Remove the CPU cover as described in Section 5.5.1.

2. Remove the status panel as described in Section 5.6.

3. Remove the display assembly as described in Section 5.8.1.

4. Remove the memory expansion board as described in Section 5.4.6.

5. Remove the keyboard as described in Section 5.9.1.

6. Remove the clutch cradles as described in Section 5.8.6.

7. Remove the EMI shield (Figure 5-49).
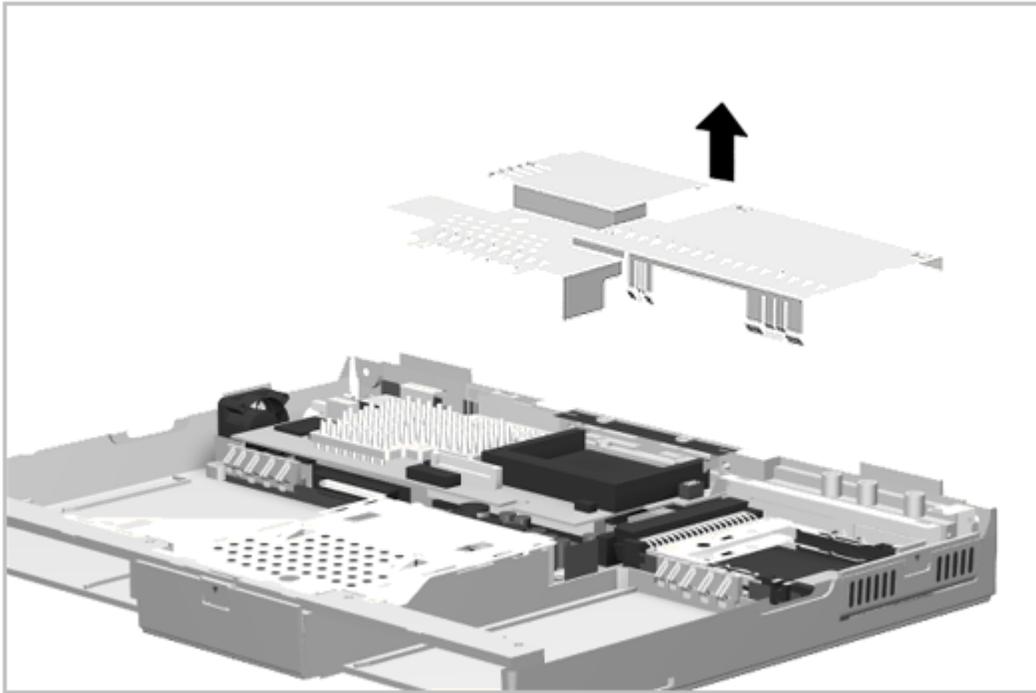
Figure 5-49. Removing the EMI Shield

8. Disconnect the thermistor cable [1] as shown in Figure 5-50.
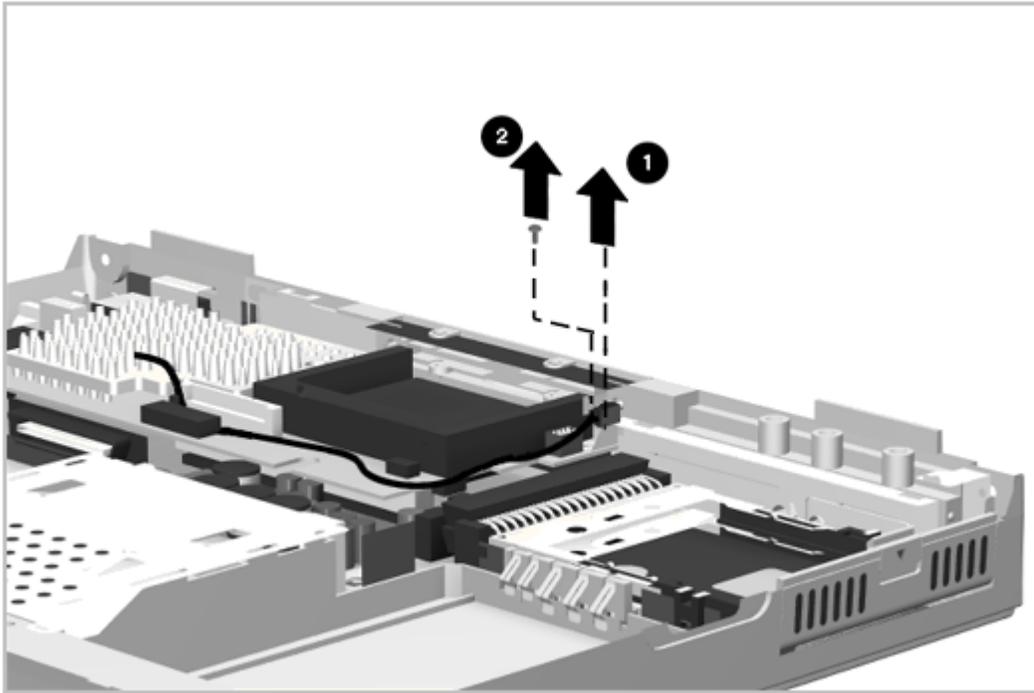
Figure 5-50. Removing the Processor Board Cable and Screws

9. Remove the screw [2] from the right rear corner of the processor board (Figure 5-50).

10. Remove the processor board as shown in Figure 5-51.
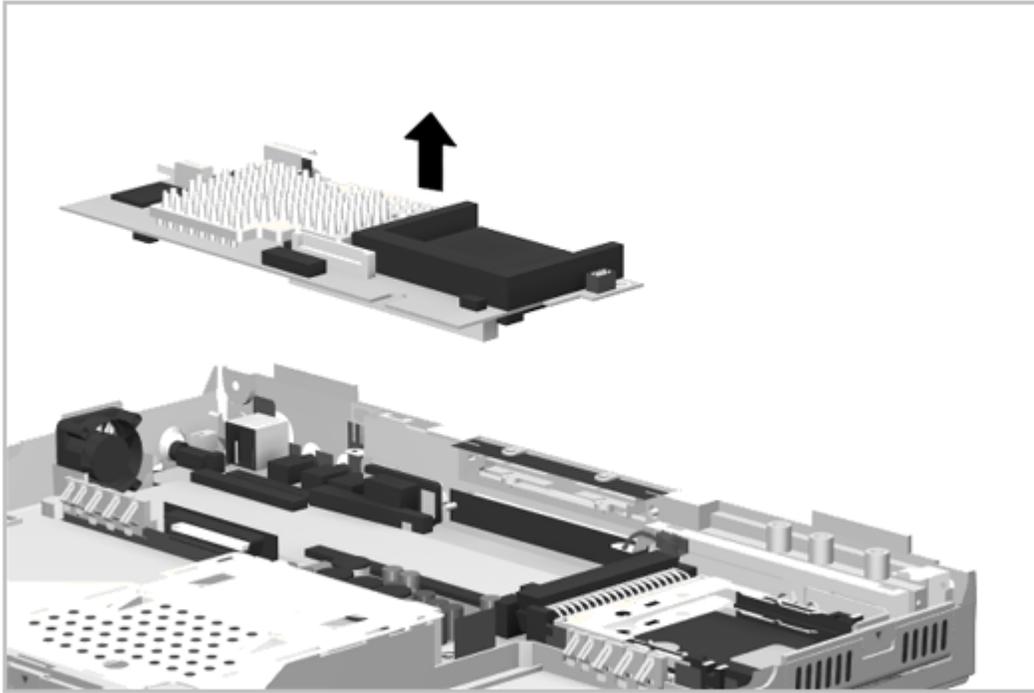
Figure 5-51. Removing the Processor Board

Before installing the processor board, verify that the display jumpers are appropriately configured for the type of display installed in the computer. The jumper locations are shown in Figure 5-52, and jumper configurations are presented in Table 5-1.
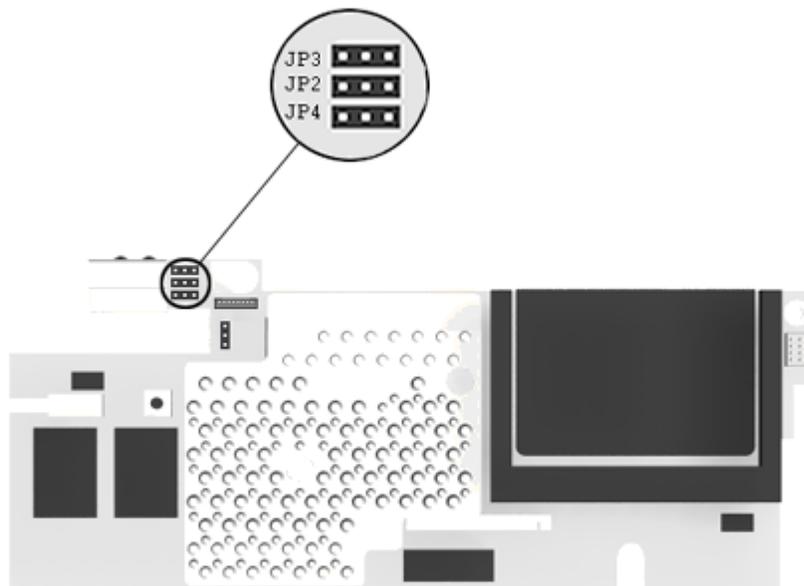
Figure 5-52. Display Configuration Jumpers

```
Table 5-1. Display Configuration Jumpers
```

Display Type	JP3	JP2	JP4
LTE 5000 10.4 in VGA CSTN	1-2	2-3	1-2
LTE 5000 10.4 in VGA CTFT	2-3	2-3	1-2
LTE 5000 11.3 in SVGA CSTN	1-2	2-3	2-3
LTE 5100 10.4 in SVGA CTFT	2-3	2-3	2-3
LTE 5150 Rev. 4.X * 11.3 in SVGA CSTN	1-2	1-2	1-2
LTE 5150 Rev. 2.X * 11.3 in SVGA CSTN	2-3	1-2	1-2
LTE 5200 10.4 in SVGA CTFT	2-3	2-3	2-3
LTE 5250 10.4 in SVGA CTFT	2-3	2-3	2-3
LTE 5280 11.3 in SVGA CTFT	2-3	2-3	2-3
LTE 5300 12.1 in SVGA CTFT	2-3	2-3	2-3
LTE 5380 12.1 in 1024x768	2-3	1-2	1-2

```
CTFT

LTE 5400 12.1 in 1024x768          2-3              2-3              2-3
CTFT
--------------------------------------------------------------------------
* Verify the display panel revision number by checking the printed number
  on the large ferrite bead on the display cable. The display cable is
  located on the left side of the display assembly.
==========================================================================
```

Reverse the above procedure to install a processor board, taking care with
the placement of the EMI shield (Figure 5-53).
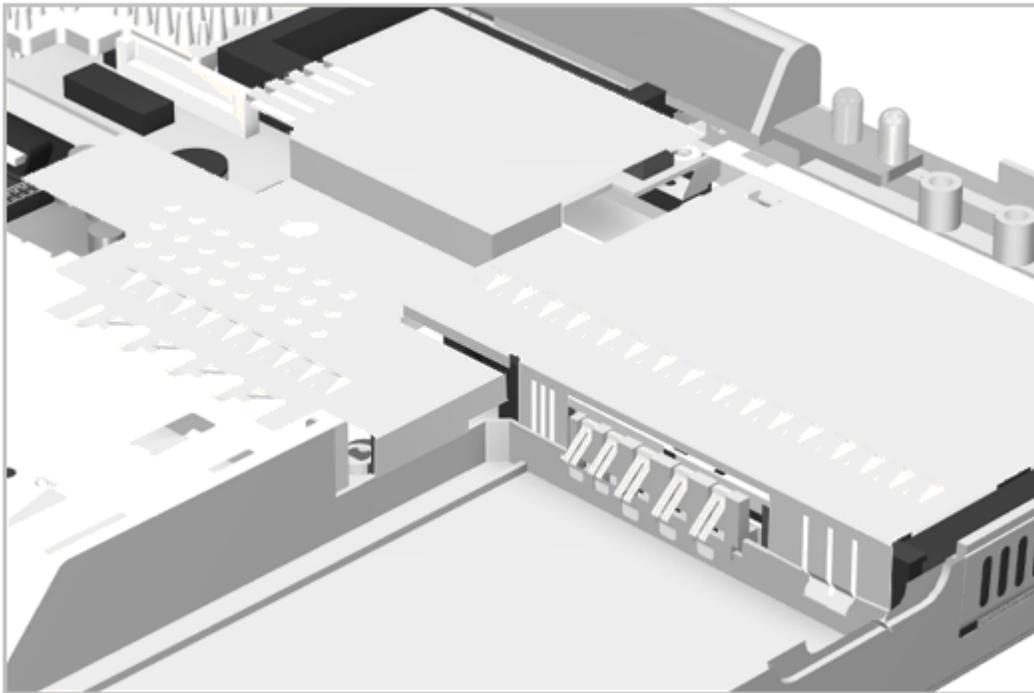
Figure 5-53. Placement of the EMI Shield

Chapter 5.12 Microphone Extension Cable

The microphone extension cable is routed under the processor board. To
remove and replace the microphone extension cable, complete the following
steps:

1. Remove the processor board as described in Section 5.11.

2. Disconnect the microphone extension cable from the microphone cable and
   its connector in the left rear corner of the system board, and lift the
   cable out (Figure 5-54).
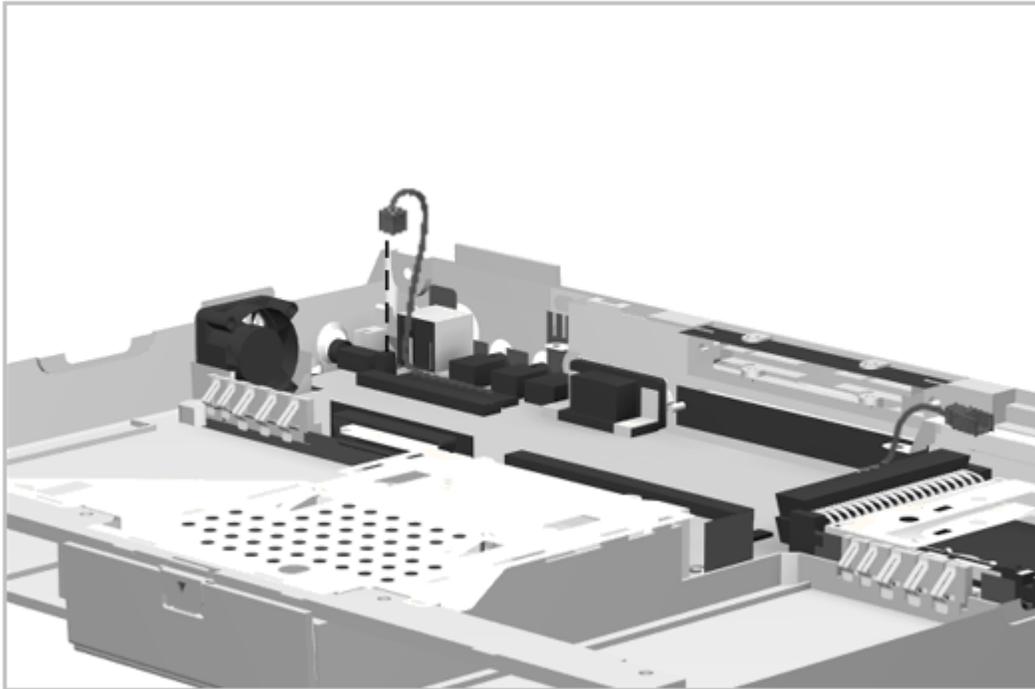
Figure 5-54. Removing the Microphone Extension Cable

Chapter 5.13 Power Board

To remove the power board, complete the following steps:

1. Remove the processor board as described in Section 5.11.

2. Remove the screw near the hard drive bay (Figure 5-55) and lift the
   power board out of the computer.
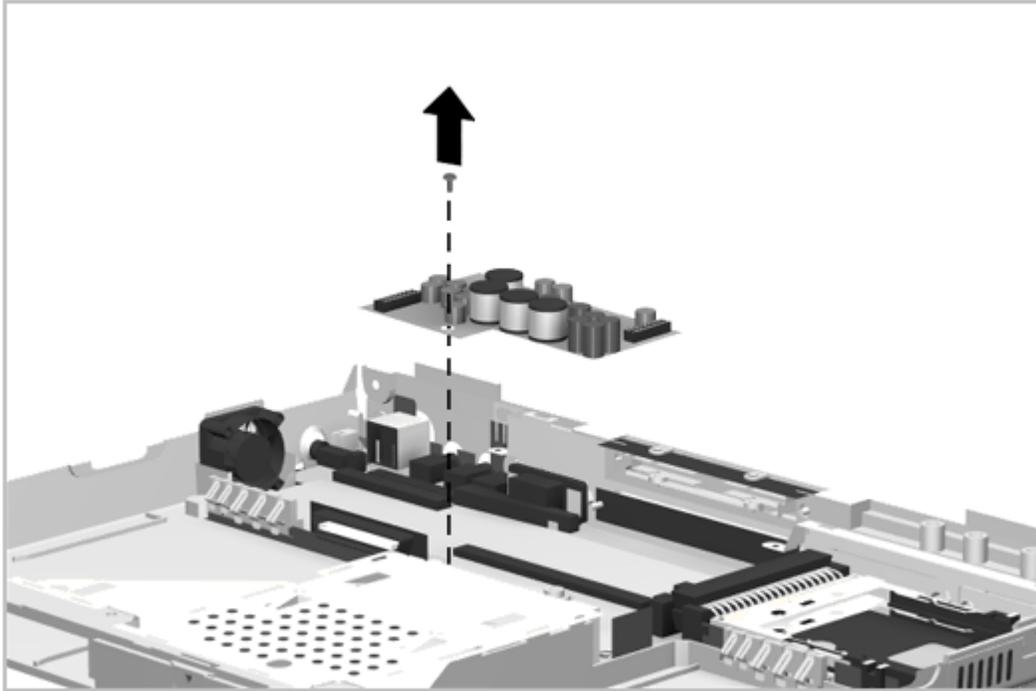
Figure 5-55. Removing the Power Board

Reverse the above procedure to install a power board.

Chapter 5.14 System Board

To remove the system board, complete the following steps:

1. Remove the CPU panel as described in Section 5.5.1.

2. Remove the display as described in Section 5.8.1.

3. Remove the processor board as described in Section 5.11.

4. Remove the power board as described in Section 5.13.

5. Remove the insulator laying on top of the system board if it is damaged
   (Figure 5-56). It is not necessary to remove the insulator to remove
   the system board but it is an opportune time to inspect and replace the
   insulator.
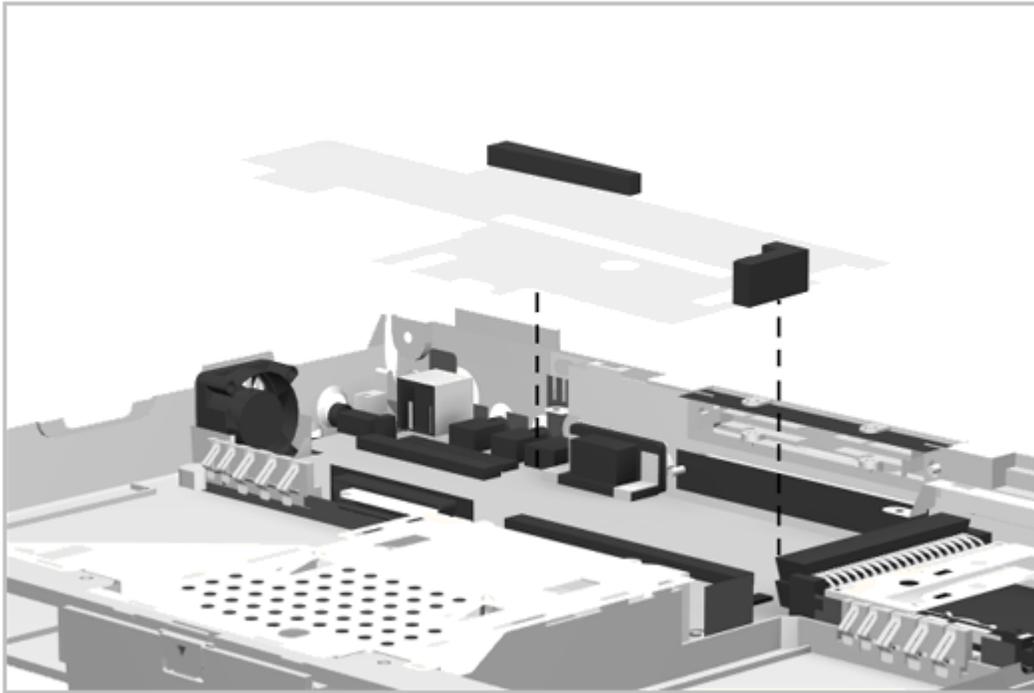
Figure 5-56. Removing the System Board Insulator

6. Remove the standoff from the left rear corner of the system board
   (Figure 5-57).
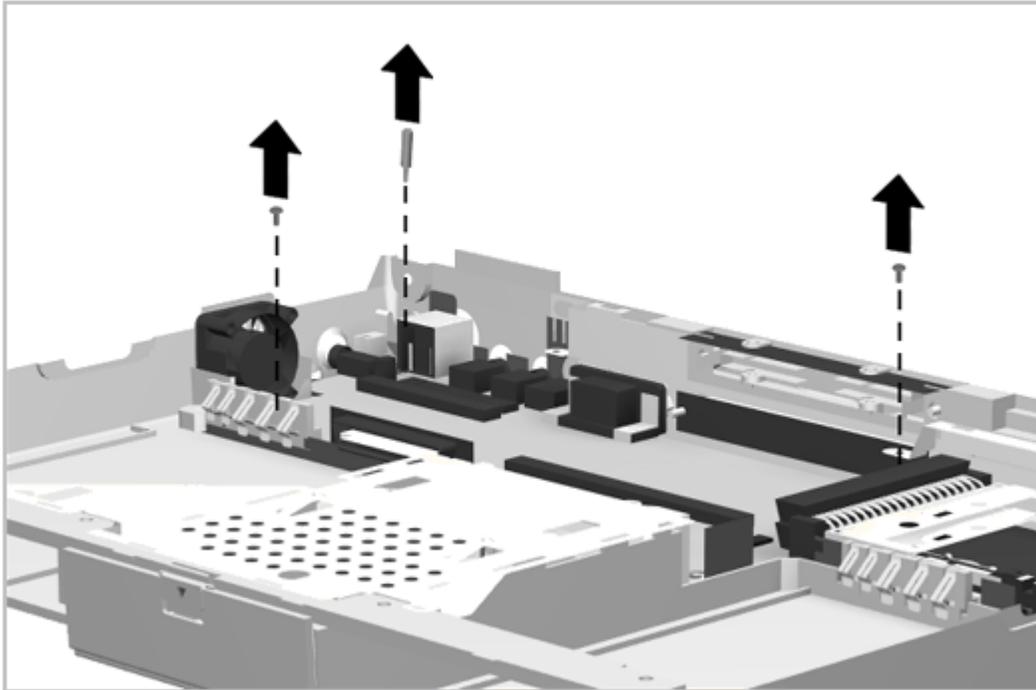
Figure 5-57. Removing the System Board Standoff and Screws

7. Remove the screw from the front left and the screw from the right rear of the system board (Figure 5-57).

8. Remove the two screwlocks from the option connector on the rear of the computer (Figure 5-58).
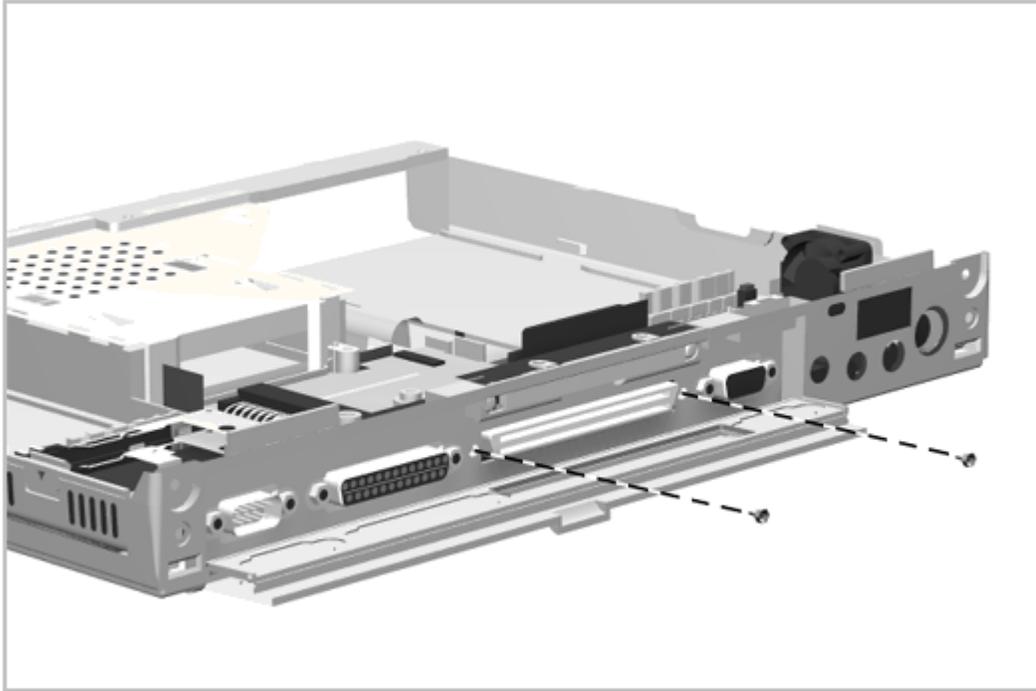
Figure 5-58. Removing the System Board Screwlocks

9. The system board can now be lifted out of the computer as shown in Figure 5-59.
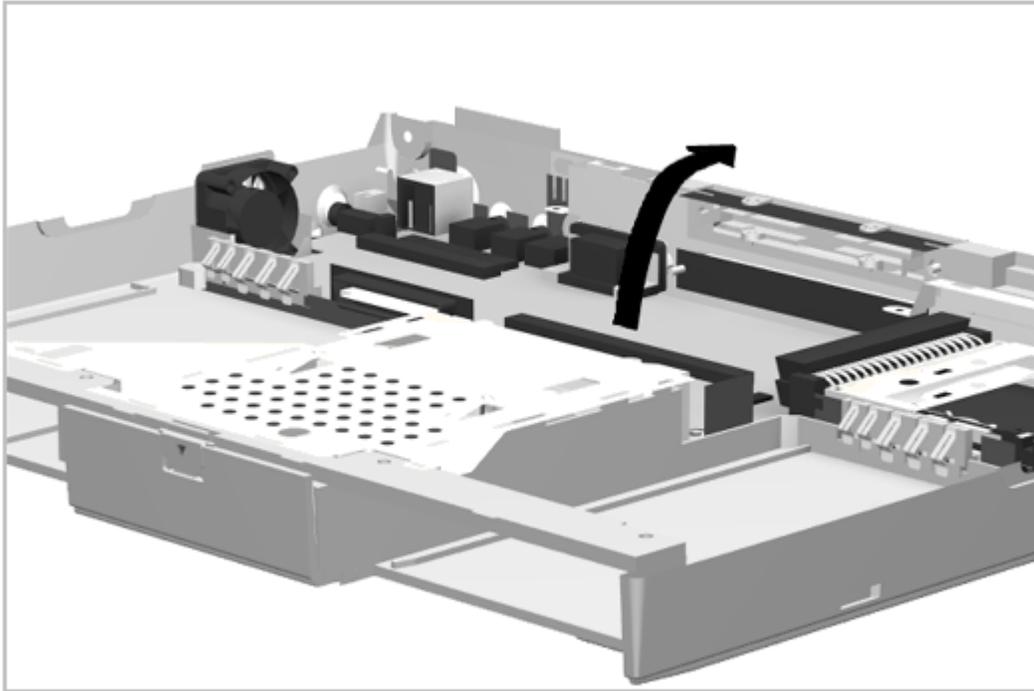
Figure 5-59. Removing the System Board

NOTE: Begin lifting the system board at the edge near the hard drive
      shield. The sheet metal may have to be deflected slightly to provide
      clearance for removing the board. Continue lifting the system board
      out toward the front of the computer.

Reverse the above procedure to install the system board.

IMPORTANT: When installing the system board, install the screws and
           standoff first but do not tighten them. This allows the
           alignment pins to properly position the board. Next, install
           the screwlocks, then tighten the screws and standoff. This
           procedure ensures proper alignment of the External Options
           Connector on the system board with the connector on the
           expansion base at docking.

Chapter 6. MultiBay Expansion Base: Removal and Replacement Procedures

Chapter 6.0 Introduction

This chapter presents the removal and replacement procedures for the MultiBay Expansion Base. For information on the MultiBay ISA Expansion Base, refer to Section 7.

Chapter 6.1 Serial Number

The expansion base serial number should be reported to Compaq when requesting information or ordering spare parts. The serial number is displayed on the rear of the expansion base to the right of the serial port.

Figure 6-1. MultiBay Expansion Base Serial Number Location

Chapter 6.2 Disassembly Sequence Chart

Use the chart in Figure 6-2 to determine the section number and disassembly sequence for removing components from the MultiBay Expansion Base.

Figure 6-2. Expansion Base Disassembly Sequence Chart

Chapter 6.3 Preparing the MultiBay Expansion Base for Disassembly

```
NOTE: It is important that these instructions be followed when installing
      a new expansion base top cover (Service Spare Part Number
      213711-003).
```

1. Do not remove the plastic hole cover.

2. Discard the fan.


```
Before beginning removal and replacement procedures, complete the
following steps:
```

1. Undock the computer from the expansion base (Section 5.3.1).

2. Disconnect AC power and any external devices (Section 6.3.1).

3. Remove the battery pack(s) (Section 6.3.2).

4. Remove the mass storage devices (Section 6.3.3).

5. Remove any PC Cards (section 6.3.4).

6.3.1 Undocking the Computer

See Section 5.3.1 for instructions on how to undock the computer from the
expansion base.

6.3.2 Disconnecting the Expansion Base

1. Turn off the expansion base and undock the computer if it is docked in
   the expansion base. See Section 5.3.1 for detailed instructions.

2. Disconnect the power cord from the AC source and from the expansion
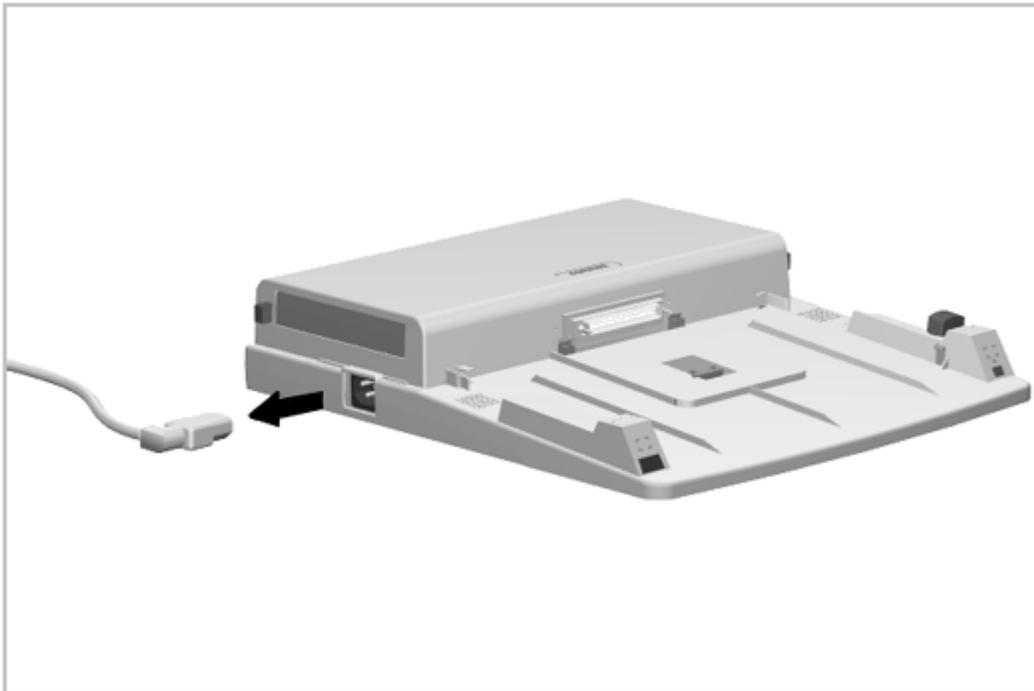   base.

Figure 6-3. Disconnecting the Expansion Base

3. Disconnect all peripheral devices from the expansion base.

4. Complete the preparation for disassembly by performing the procedures
   described in Sections 6.3.3 through 6.3.5.

6.3.3 Battery Pack

All battery packs should be removed from the expansion base before
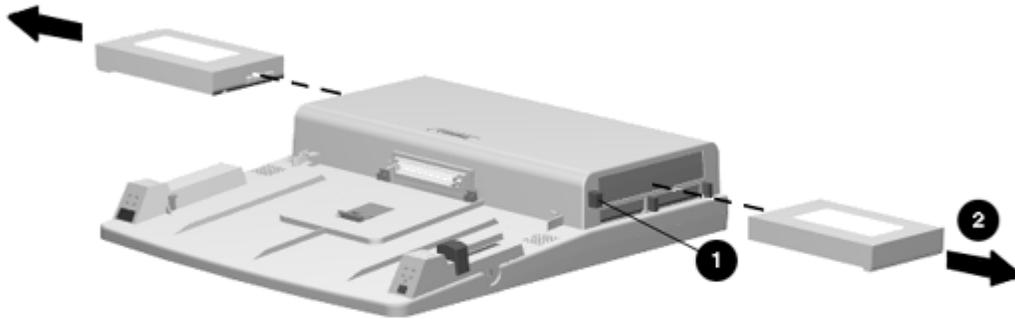performing any internal maintenance.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> WARNING <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Metal objects can damage the battery pack as well as the battery contacts
in the battery compartment. To prevent damage, do not allow metal objects
to touch the battery contacts. Place only the battery pack for the Compaq
LTE 5000 Personal Computer into the battery compartment. Do not force the
battery pack into the bay if insertion does not occur easily.

>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> CAUTION <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Do not crush, puncture, or incinerate the battery pack. Do not open a
battery pack, as this damages the pack, makes it unusable, and exposes
potentially harmful battery components. There are no field-serviceable
parts located inside the battery pack.

>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Removing the Battery Pack

To remove a battery pack from the expansion base, complete the following
steps:

1. Push the release button [1] to eject the battery pack [2] from the bay
   (Figure 6-4).

Figure 6-4. Removing a Battery Pack from a MultiBay

2. Move the sliding panel on the front of the battery to the left.

Installing a Battery Pack

To install a battery pack into a MultiBay, complete the following steps:

1. With the label facing up and the connectors facing in, align the left side of the battery pack with the left side of the MultiBay, and push the battery pack into the MultiBay until it is seated.

2. Move the sliding panel on the front of the battery pack to the right to cover the MultiBay opening.

6.3.4 Mass Storage Devices

Removing a Mass Storage Device

To remove mass storage devices from the expansion base, complete the following steps:

1. Save and close any files that reside on the drive that is to be removed.

2. If the mass storage device is a diskette drive or CD-ROM drive, remove the diskette or CD from the drive.

3. Push the MultiBay device release button [1] and remove the device [2] from the bay (Figure 6-5).

Figure 6-5. Removing a Mass Storage Device

Installing a Hard Drive

Only hard drives that are configured for use as a secondary drive can be used in MultiBay II of the expansion base. Drives without secondary drive capability can be used only in MultiBay I of the expansion base. These drives are labeled appropriately. See Appendix C of this manual for more details.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> CAUTION <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Removable drives should only be inserted in or removed from the expansion base when the computer is turned off. Failure to follow this precaution can result in damage to the drive and expansion base and cause loss or corruption of data.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Before a hard drive can be inserted in the expansion base, it must be placed in a hard drive carrier. To install a hard drive in a carrier and insert it in the expansion base, complete the following steps:

1. Turn off the expansion base.

2. Make sure the latch inside the carrier is pushed to the right, and place the hard drive in the carrier with the label facing up and the contacts facing the rear of the carrier.

3. Slide the drive toward the rear of the carrier until it is seated (Figure 6-6).

Figure 6-6. Placing a Hard Drive in the Hard Drive Carrier

4. Push the latch inside the carrier to the left to secure the hard drive in place.

5. Align the left side of the carrier with the left side of the MultiBay, and push the carrier into the bay until it is seated.

Installing a Diskette Drive or CD-ROM Drive

To install a diskette drive or CD-ROM drive into the MultiBay, complete the following steps:

1. Turn off the computer.

2. Align the left side of the diskette drive or CD-ROM drive with the left

side of the MultiBay and push the drive into the bay until it is
seated.

6.3.5 PC Card

All PC cards should be removed from the expansion base before performing
any internal maintenance on the computer.

Removing a PC Card

To remove a PC Card, complete the following steps:

1. Push the PC Card release button [1]. The card [2] ejects out of the
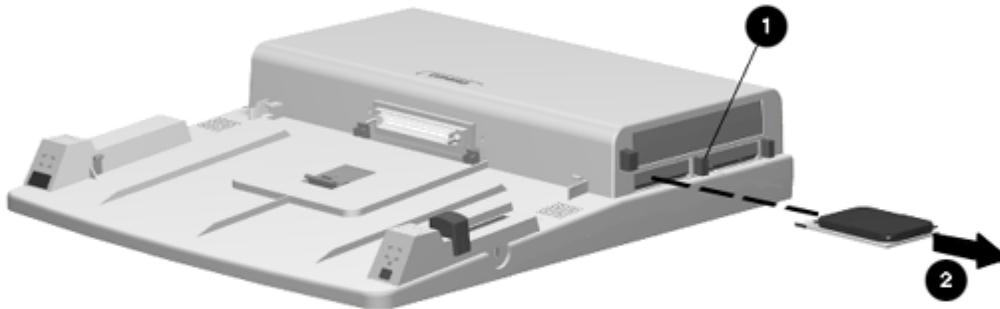   card slot (Figure 6-7).

Figure 6-7. Removing a PC Card

2. The PC Card door automatically closes after removing the card.

Installing a PC Card

To install a PC Card, complete the following steps:

1. Push open the PC Card door so you can see the tracks inside.

2. Place the PC Card in the tracks with the card connector to the inside and label up.

3. Slide the card in until it seats. The door remains open while the card device is connected.

Chapter 6.4 External Components

This section describes the removal and replacement procedures that do not require access to the internal components of the expansion base. This includes:

o Feet

o MPEG Connector Door

6.4.1 Expansion Base Feet

The feet [1] for the expansion base are rectangular, adhesive-backed rubber pads. Install the feet by removing the protective covering from the adhesive back and placing the feet in their positions on the bottom of the expansion base (Figure 6-8).
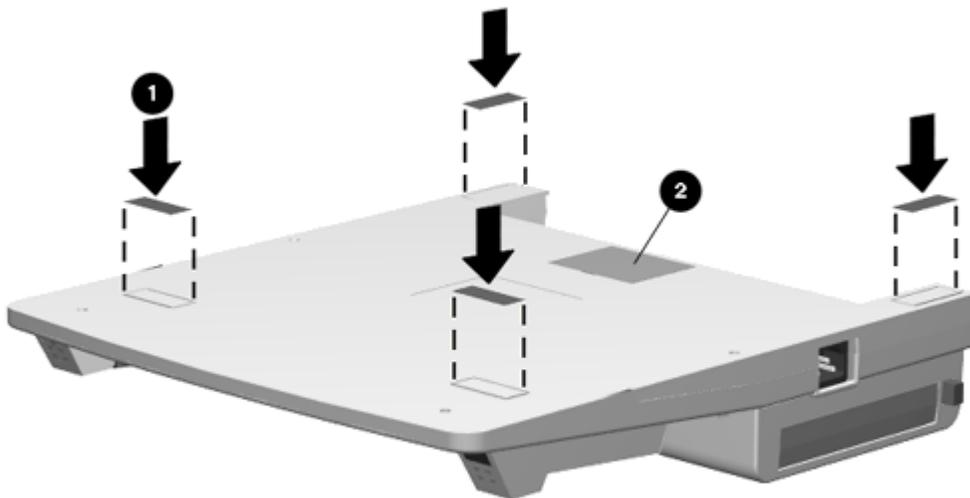
Figure 6-8. Expansion Base Feet and MPEG Connector Door

```
6.4.2 MPEG Connector Door
```

```
The MPEG connector door [2] provides visual access to the MPEG connector
for guiding the connector into place when installing the bottom cover
assembly with the connector attached to the bottom cover (Figure 6-8).
Procedures presented later in this manual prescribe separating the MPEG
connector from the bottom cover at disassembly and not removing the MPEG
connector door.
```

```
If you choose to leave the MPEG connector attached to the bottom cover,
you should remove the MPEG connector door for visual access to the MPEG
connector and its connecting location on the main board. Use a small
flat-blade screwdriver to pry the MPEG connector door loose.
```

Chapter 6.5 Bottom Cover Assembly

```
The bottom cover assembly is spared as a unit and consists of:
```

```
o Bottom cover
```

```
o MPEG connector access door
```

```
o Feet
```

```
o Labels
```

```
The feet are also spared separately. Feet installation is described in
Section 6.4.2. The feet, labels, and MPEG connector access door are
preinstalled.
```

```
To remove the bottom cover assembly, complete the following steps:
```

```
1. Prepare the expansion base for disassembly as described in Section 6.3.
```

```
2. Place the expansion base face down on the work surface and remove the
   ten screws that secure the bottom cover to the expansion base
   (Figure 6-9).
```
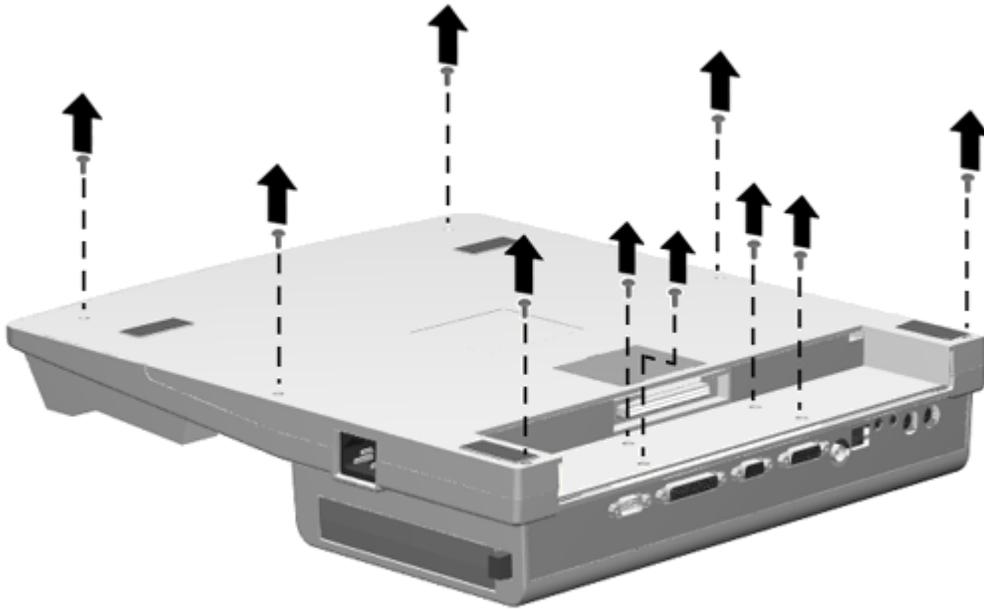
Figure 6-9. Removing the Bottom Cover Screws

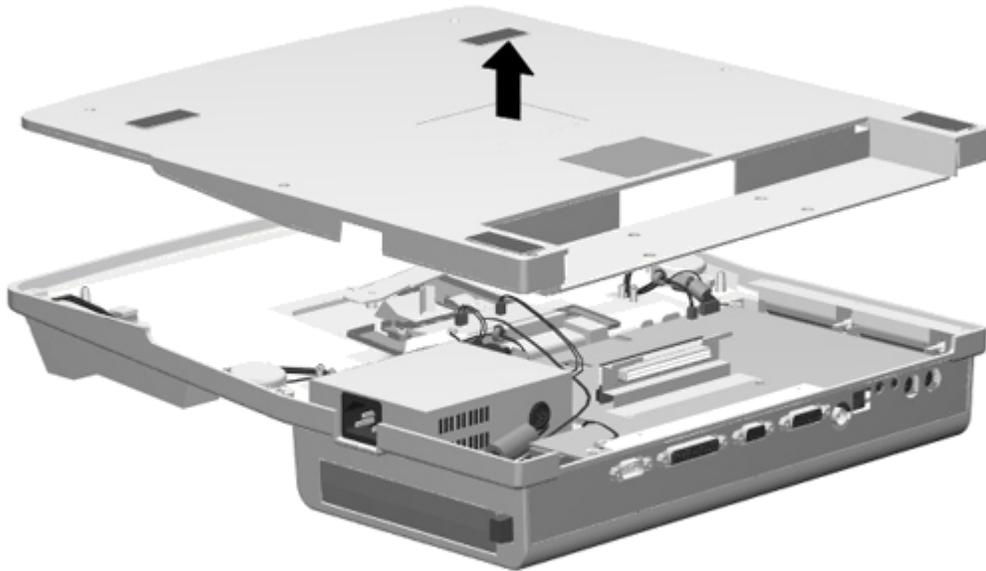3. Lift the bottom cover from the expansion base (Figure 6-10).

Figure 6-10. Removing the Bottom Cover Assembly

To install the bottom cover assembly, reverse the procedure presented
above.

Chapter 6.6 MPEG Connector

The MPEG connector plugs into the main board and is accessed by removing
the bottom cover assembly. Remove the bottom cover assembly as described
in Section 6.5 and disconnect the MPEG connector from the main board as
shown in Figure 6-11.
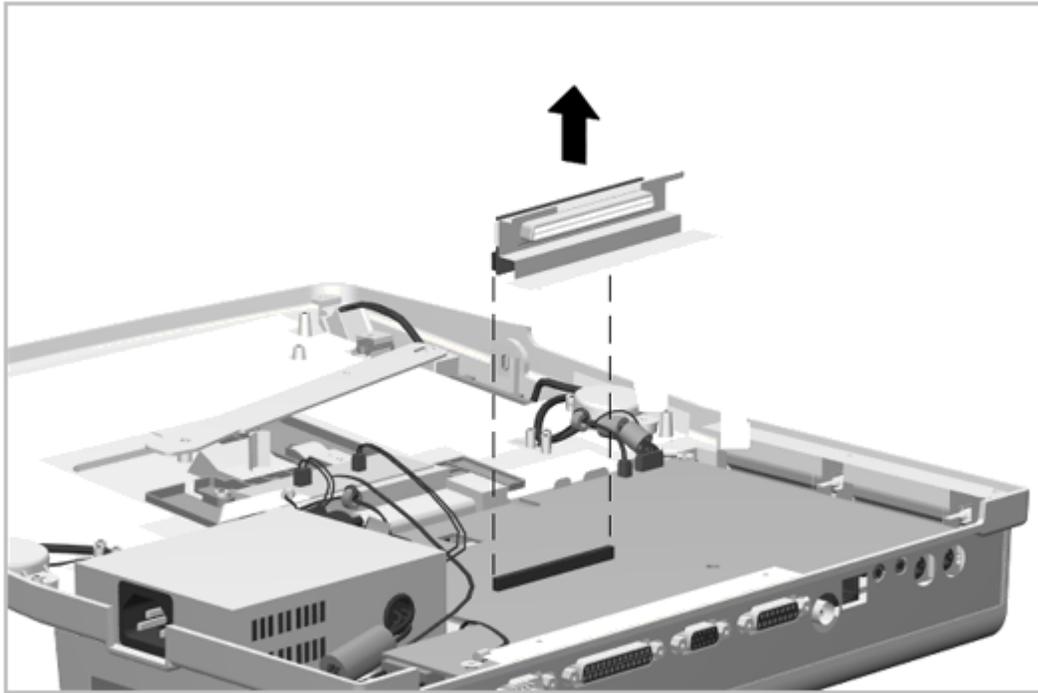
Figure 6-11. Removing the MPEG Connector

Reverse this procedure to install the MPEG connector.

Chapter 6.7 Power Supply

The power supply is mounted in the right rear corner of the expansion base when viewed with the base placed top side down on the work surface. It is replaced as an assembly with its fan.

To remove the power supply, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 6.3.

2. Remove the bottom cover assembly as described in Section 6.5.1.

3. Disconnect the power supply from the main board (Figure 6-12).

4. Disconnect the power supply fan cable from the Fan Control Board (Figure 6-12).
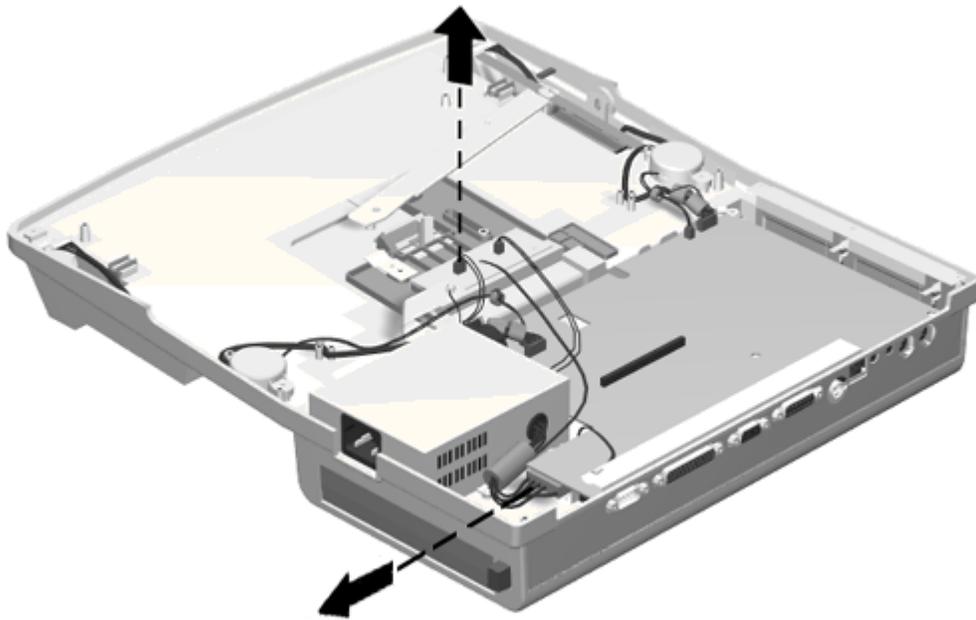
Figure 6-12. Disconnecting the Power Supply

5. Note the routing of the ground wires attached to the rear power supply
   screws. Remove the four screws and lift the power supply out
   (Figure 6-13).
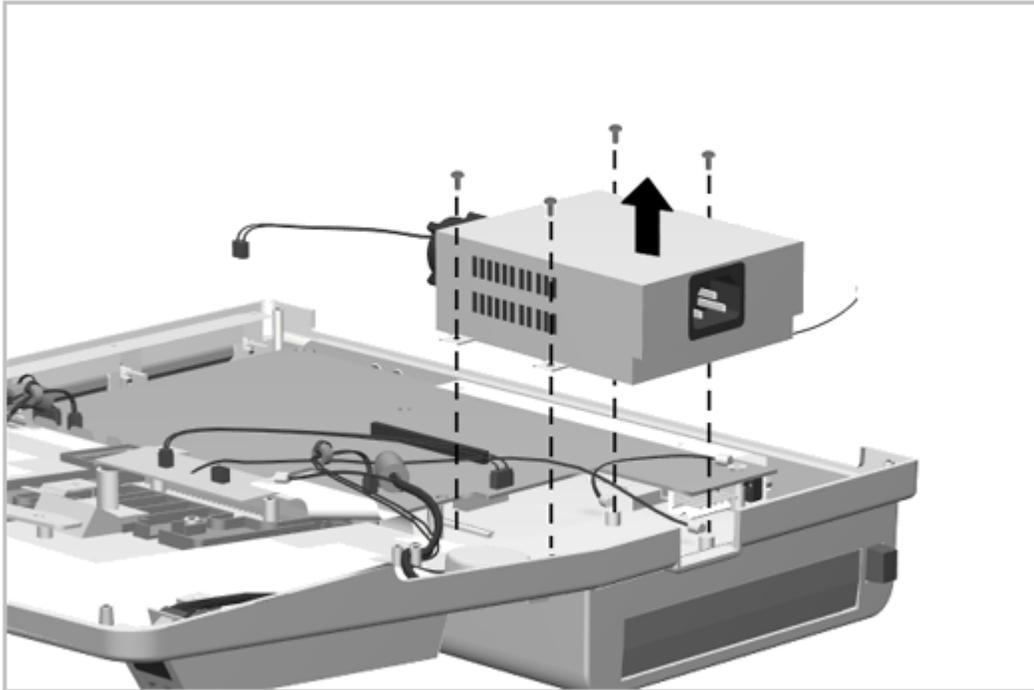
Figure 6-13. Removing the Power Supply Screws and Power Supply

To install the power supply, reverse the procedure presented above. Be sure to reconnect the ground wire.

Chapter 6.8 Main Board

To remove the main board, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 6.3.

2. Remove the two shoulder screws from the computer connector as shown in Figure 6-14.
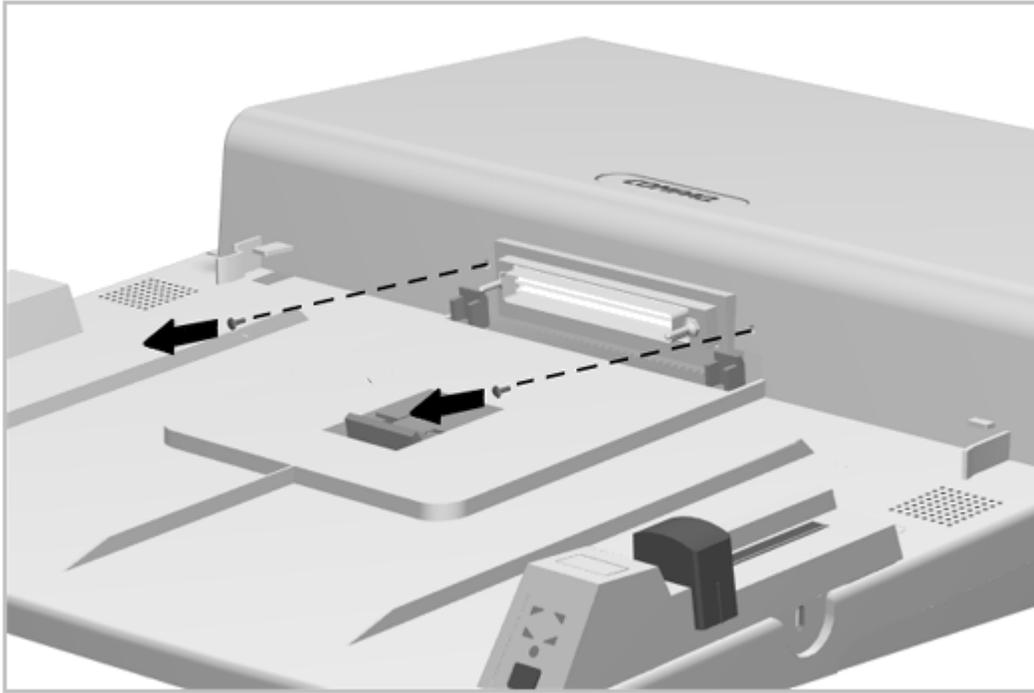
Figure 6-14. Removing the Computer Connector Screws

3. Remove the bottom cover as described in Section 6.5.

4. Note the routing of all cables and disconnect the power cable [1], speaker cables [2], IrDA cable [3], power supply cable [4], and cable [5] (Figure 6-15).
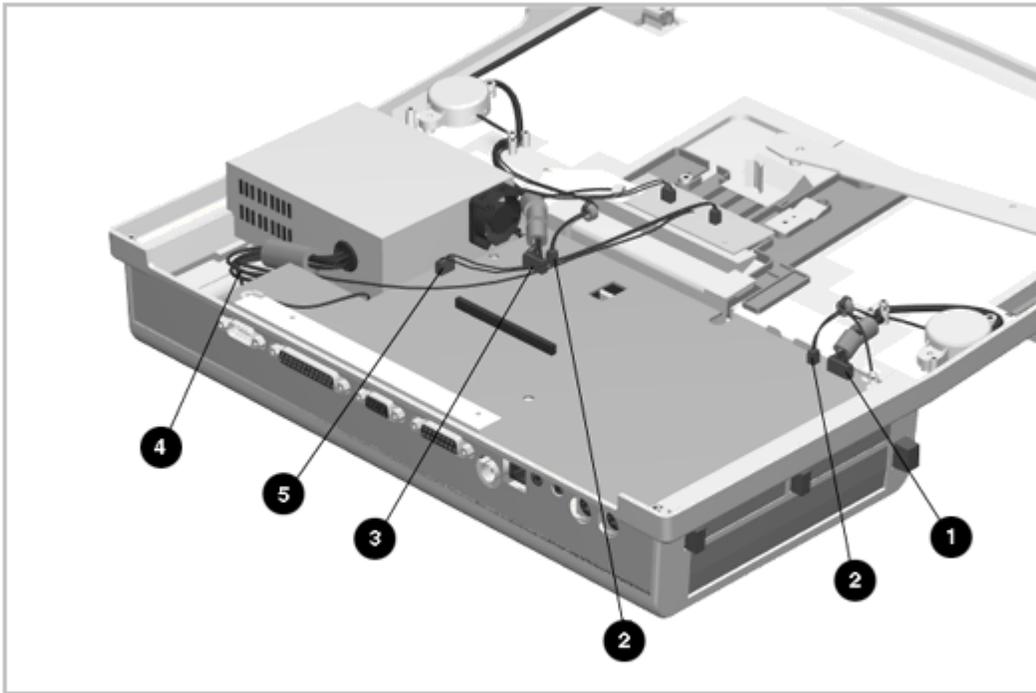
Figure 6-15. Disconnecting and Removing the Main Board Cables

5. Disconnect the fan [1] and fan power [2] at the Fan Control Board
   (Figure 6-16).
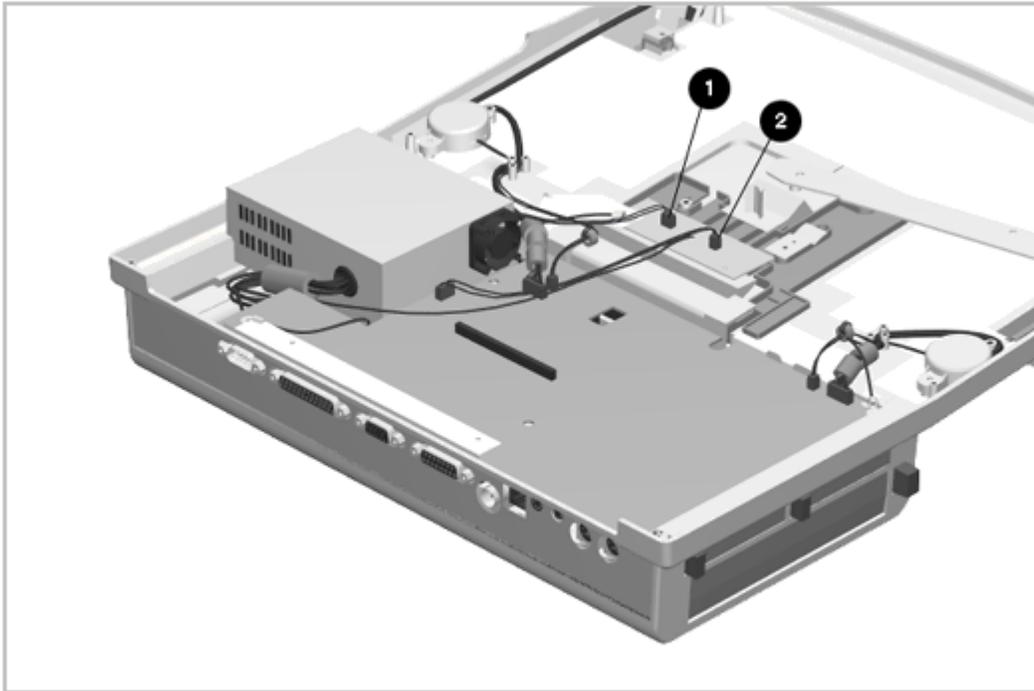
Figure 6-16. Disconnecting the Fan Control Board

6. Remove the remaining three screws from the main board and the two screws from the CPU connector bezel (Figure 6-17).
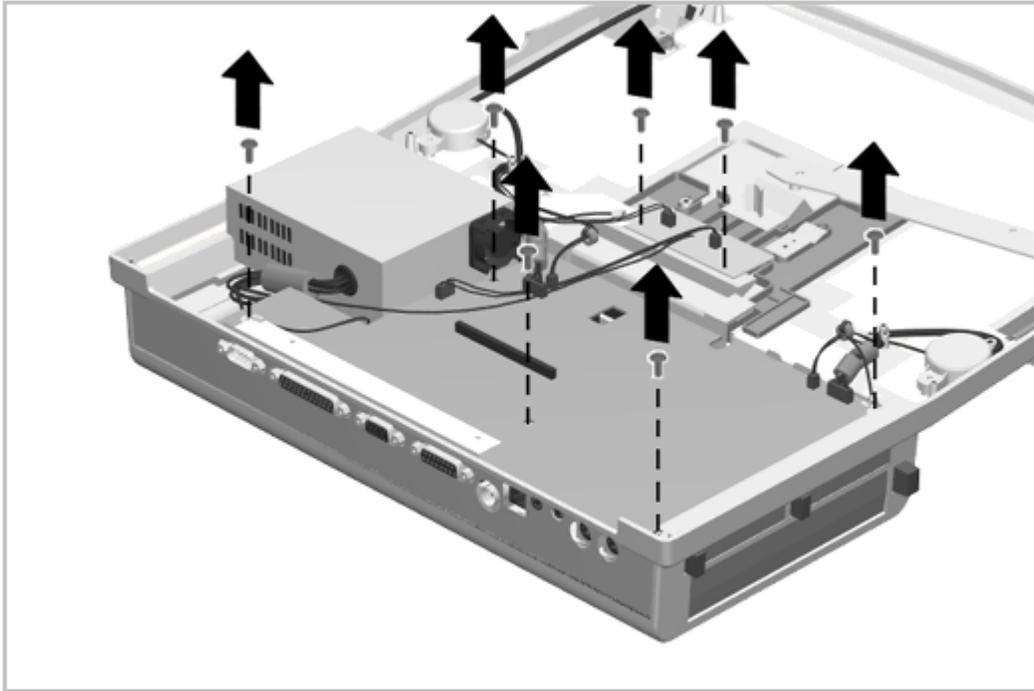
Figure 6-17. Removing the Main Board Screws

7. Lift the main board out of the base. Begin lifting at the front edge
   of the board [1] . The CPU connector bezel [2] comes off with the board
   but is not attached to the board. Some manipulation is required around
   the PC Card door module (Figure 6-18).
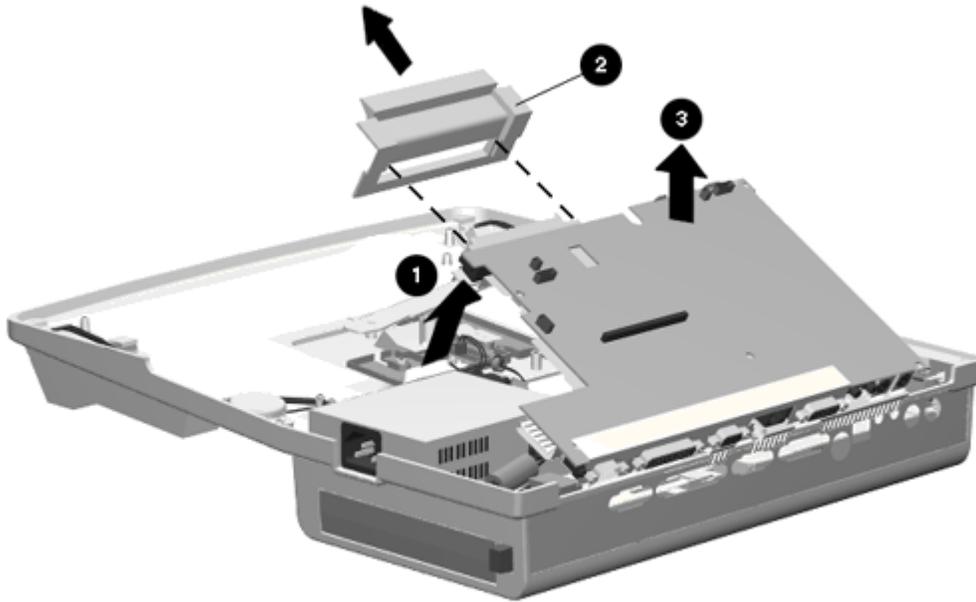
Figure 6-18. Removing the Main Board Assembly

Reverse the removal procedure described above to install the main board. Position the CPU connector cover in place but do not secure it with screws until the main board is properly seated. Then proceed with the rest of the installation.

Chapter 6.9 CPU Connector Bezel

The main board must be removed to remove and replace the CPU connector bezel. See Section 6.8 for details.

Chapter 6.10 MultiBay Assembly

The main board must be removed before removing a MultiBay assembly.

The MultiBay assembly is spared as part of the top cover assembly. However, the Multibay assembly may need to be removed in order to access the MultiBay door assembly. To remove a MultiBay, complete the following steps:

1. Remove the three screws and lift the bay out (Figure 6-19).
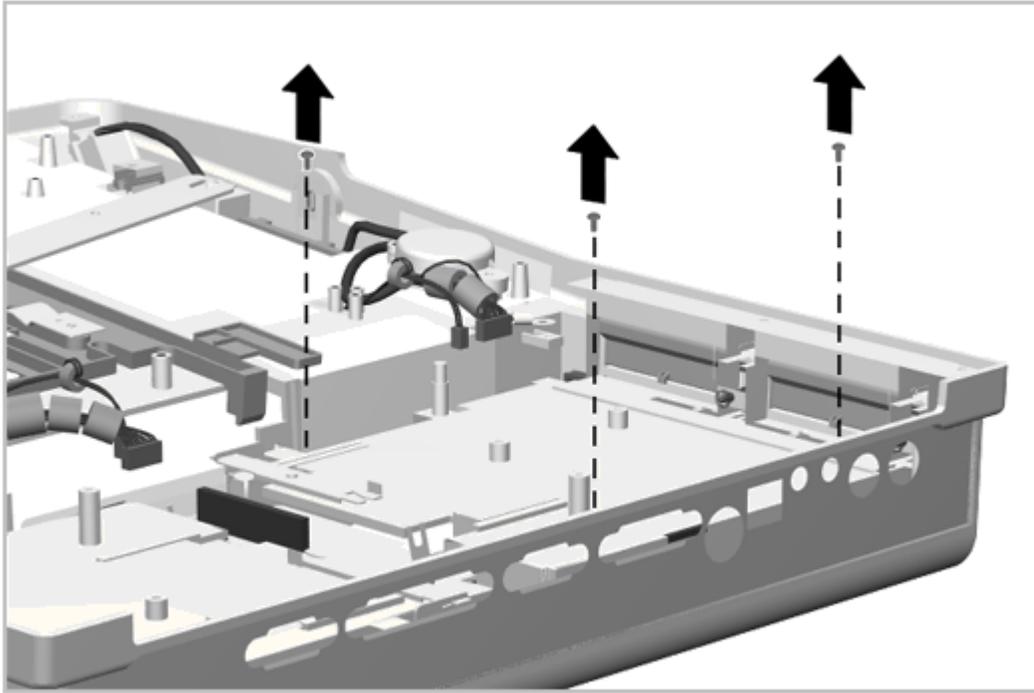
Figure 6-19. Removing the MultiBay Assembly Screws

2. Begin lifting at the end of the assembly toward the MultiBay Connector Board and lift the MultiBay assembly out (Figure 6-20).
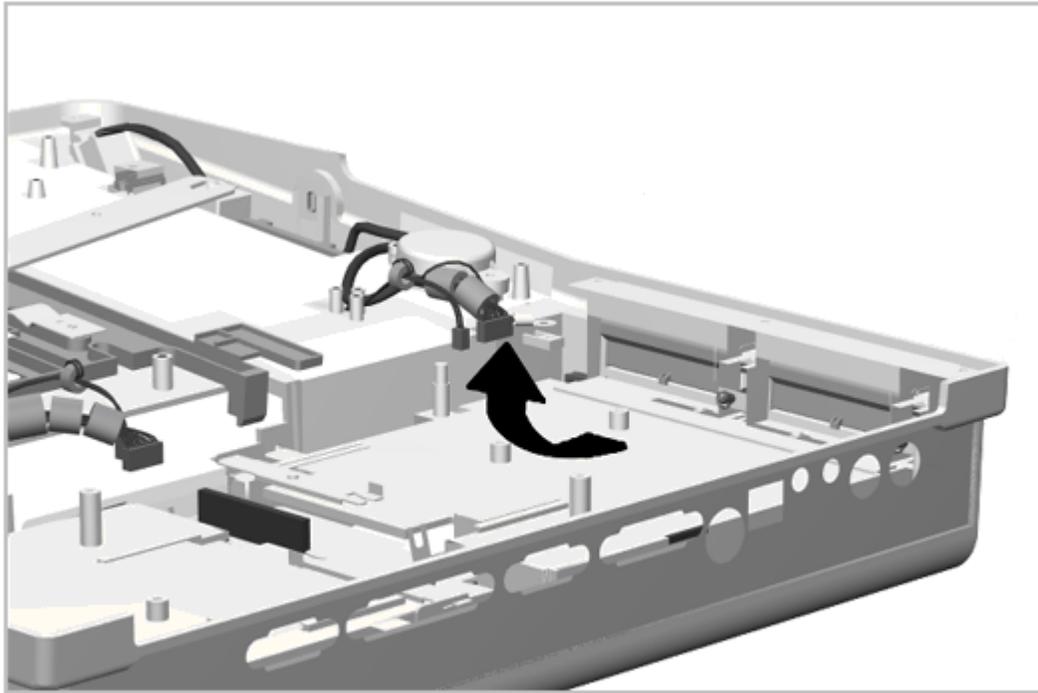
Figure 6-20. Removing the MultiBay Assembly

Reverse the above procedure to install a MultiBay assembly, inserting the end nearest the MultiBay door first (Figure 6-21). Take care not to damage the tabs on this end of the MultiBay.
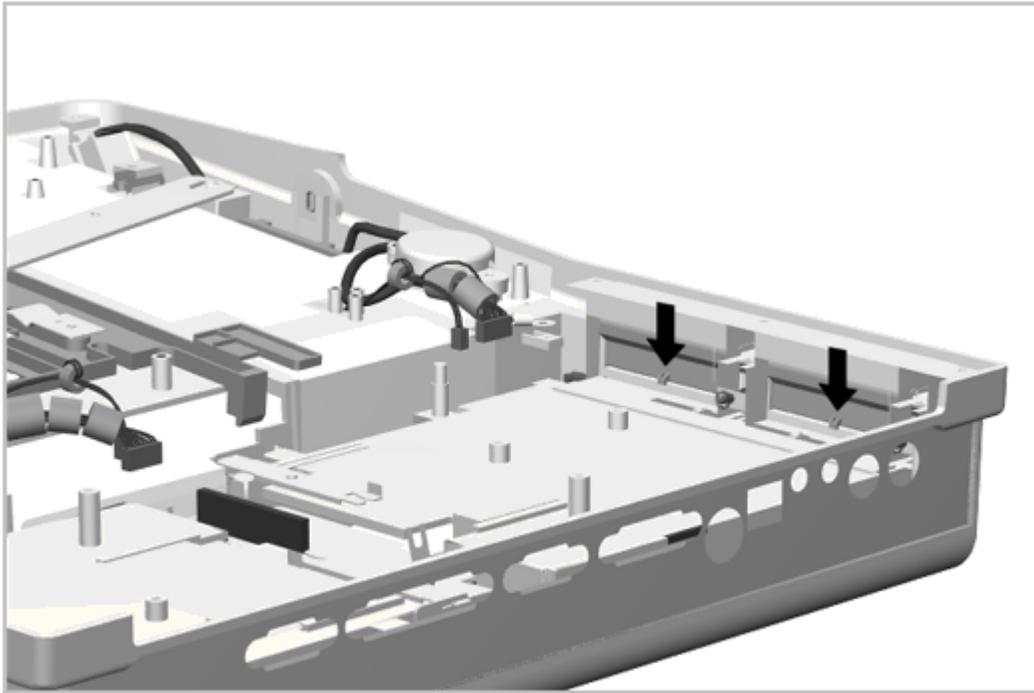
Figure 6-21. Installing the MultiBay Assembly

Chapter 6.11 MultiBay Door

The main board and one of the MultiBays must be removed before removing the MultiBay door assembly. To remove a MultiBay door assembly, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 6.3.

2. Remove the bottom cover assembly as described in Section 6.5.

3. Remove the power supply as described in Section 6.7 if servicing the door on that side.

4. Remove the main board as described in Section 6.8 if servicing the door on that side.

5. Remove the appropriate MultiBay assembly as described in Section 6.10.

6. Remove the MultiBay door by flexing the door [2] away from the expansion base as shown in Figure 6-22. Note the orientation of the spring [1]; this is important since it maintains the door in a closed position.
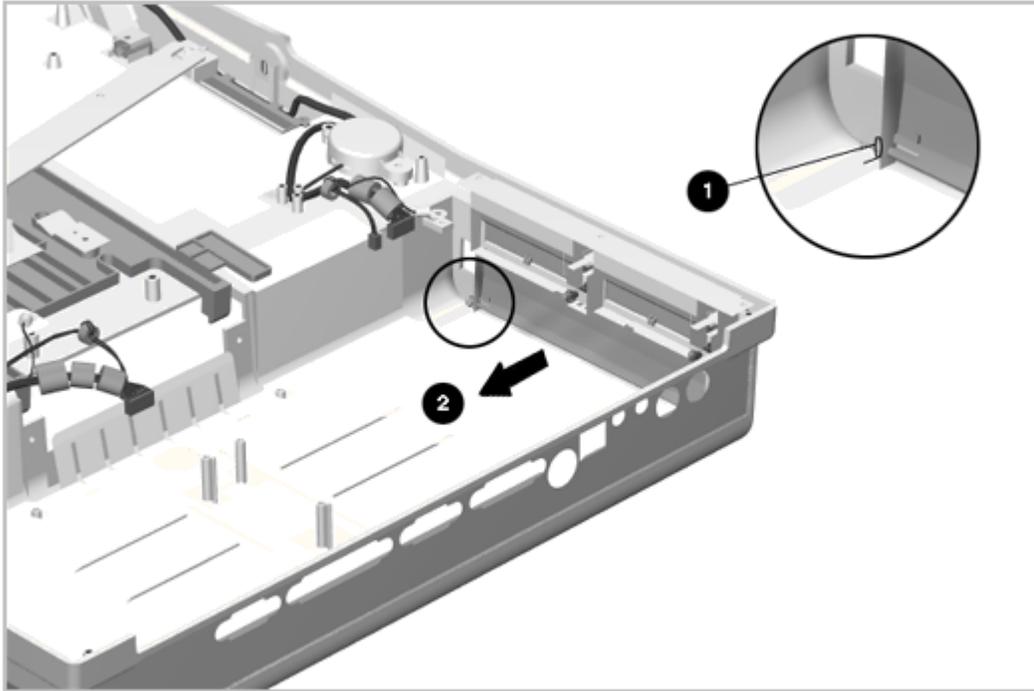
Figure 6-22. Removing the MultiBay Door

Chapter 6.12 PC Card Door Assembly

The main board must be removed before removing the PC Card door assembly. The PC Card doors are spared as an assembly, mounted in a common frame. To remove and replace the PC Card doors, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 6.3.

2. Remove the bottom cover assembly as described in Section 6.5.

3. Remove the main board as described in Section 6.8.

4. Remove the three screws and lift the PC Card door module out of the bottom cover assembly (Figure 6-23).
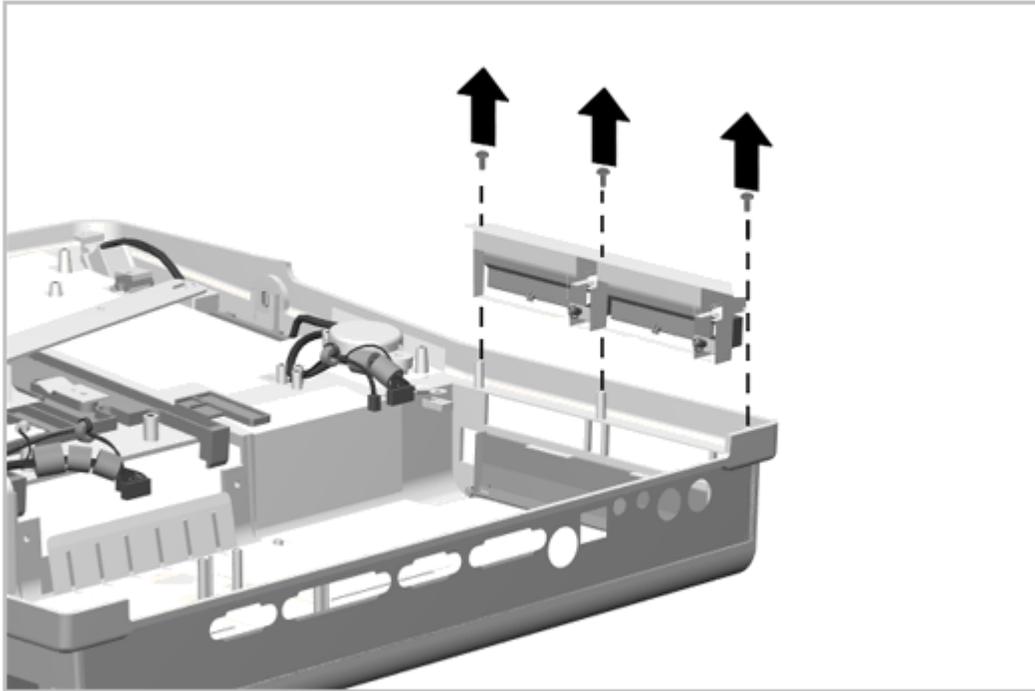
Figure 6-23. Removing the PC Card Door Assembly

Reverse the above procedure to install the PC Card door assembly.

Chapter 6.13 Power Switch Board

The bottom cover assembly must be removed before removing the power switch board. The power switch board is installed as a unit with its cable permanently attached.

To remove the power switch board, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 6.3.

2. Remove the bottom cover as described in Section 6.5.

3. Disconnect the power switch board cable and ground wire from the main board (Figure 6-24).
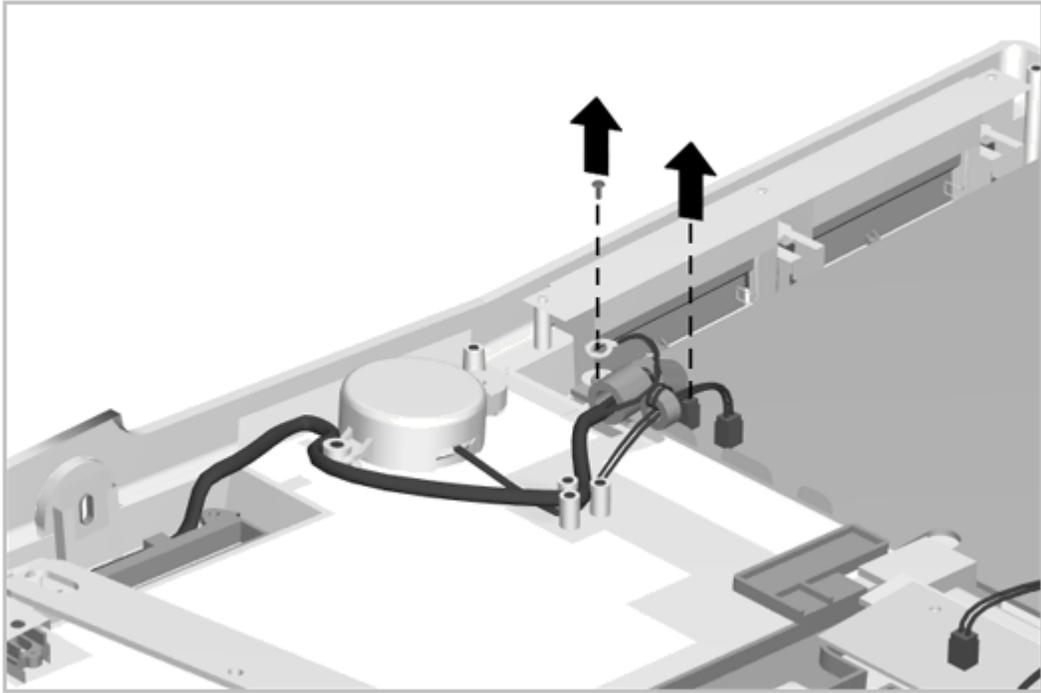
Figure 6-24. Disconnecting the Power Switch Board

4. Remove the screw holding the power switch board in place and lift the board out (Figure 6-25).
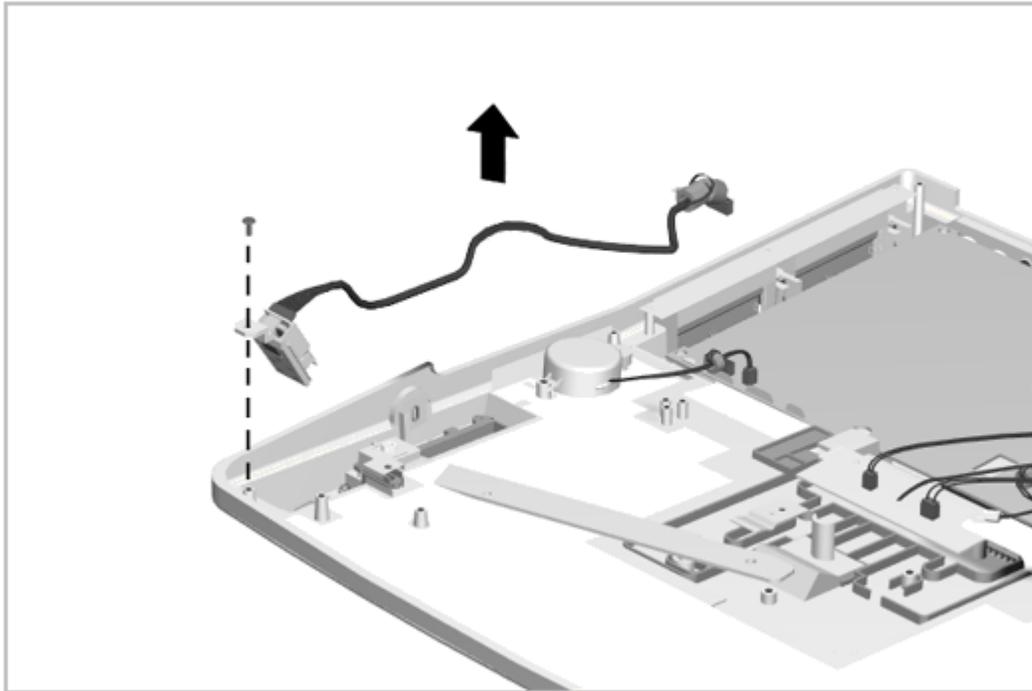
Figure 6-25. Removing the Power Switch Assembly

Reverse the above procedure to install a power switch board.

Chapter 6.14 IrDA Board

The bottom cover assembly must be removed before removing the IrDA board.
The IrDA board is installed as a unit with its cable permanently attached.

To remove the IrDA board, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 6.3.

2. Remove the bottom cover assembly as described in Section 6.5.

3. Disconnect the IrDA board cable and ground wire from the main board
   (Figure 6-26).
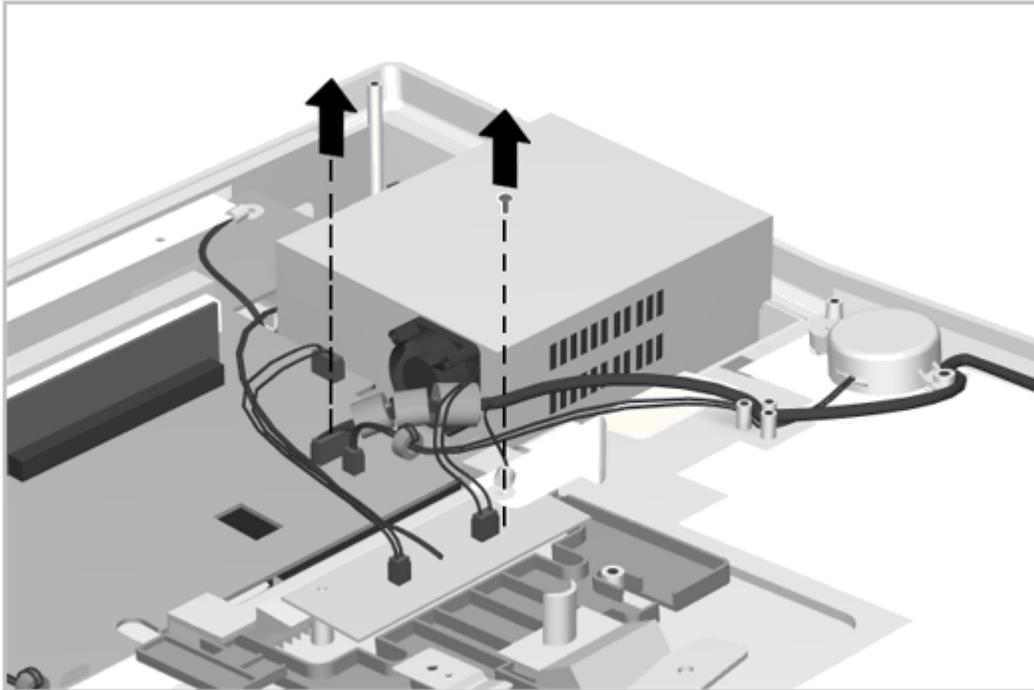
Figure 6-26. Disconnecting the IrDA Board

4. Remove the screw holding the IrDA board in place and lift the board out (Figure 6-27).
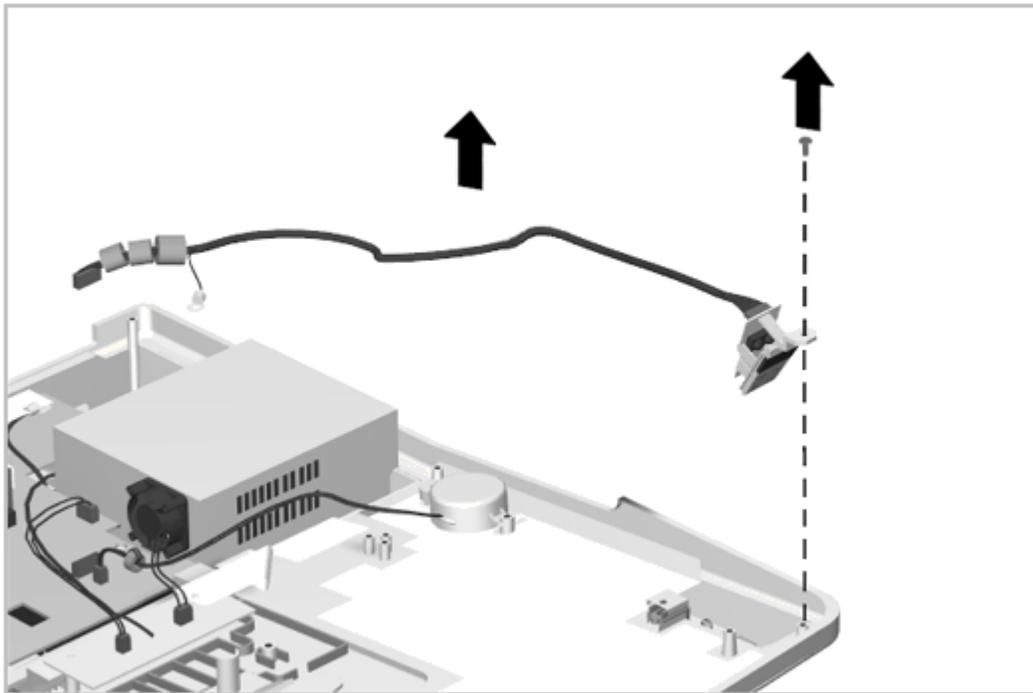
Figure 6-27. Removing the IrDA Board

Reverse the above procedure to install the IrDA board.

Chapter 6.15 Speaker Assemblies

The bottom cover assembly must be removed before removing the speaker
assembly. The speaker assembly is installed as a unit with its cable
permanently attached.

To remove the speaker assembly, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 6.3.

2. Remove the bottom cover assembly as described in Section 6.5.

3. Note the cable routing [2] and disconnect the speaker cable [1] from
   the main board (Figure 6-28).
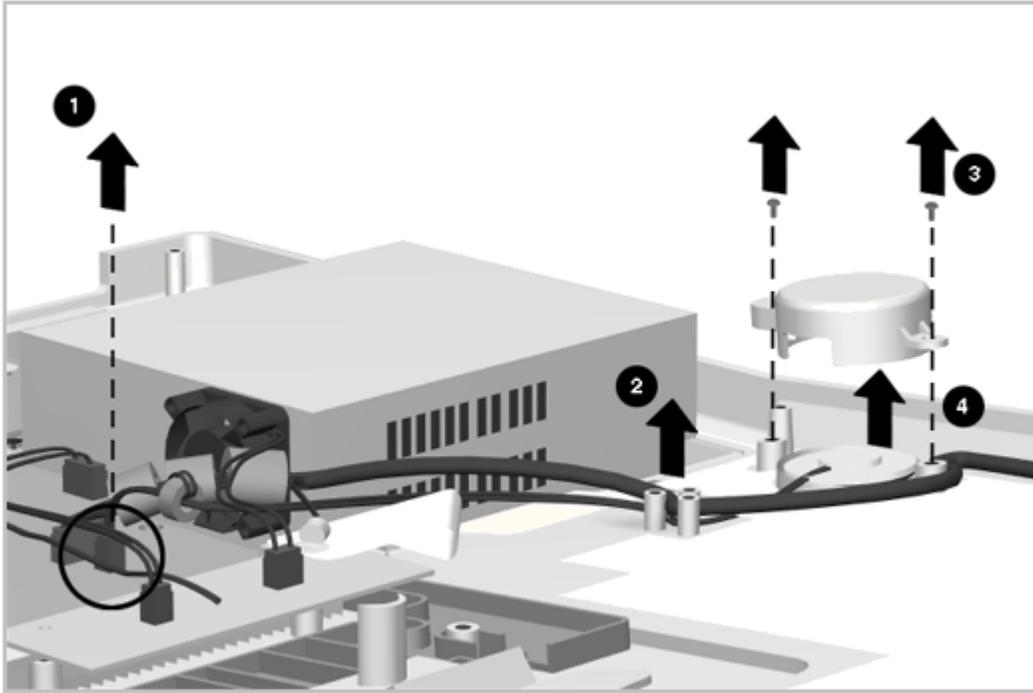
Figure 6-28. Removing the Speaker Assembly

4. Remove the two screws from the speaker bracket [3] and lift the bracket
   and board out of the bottom cover assembly [4] (Figure 6-28).

Reverse the above procedure to install a speaker assembly, paying
particular attention to the cable routing.

Chapter 6.16 Alignment Guides

The bottom cover assembly must be removed before removing the alignment
guides. The alignment guide assembly consists of the guide, spring, and
bracket.

IMPORTANT: There is a left alignment guide and a right alignment guide.
           They are keyed for proper installation.

The assembly is mounted to the expansion base with one screw. To remove
the CPU guide assembly, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 6.3.

2. Remove the bottom cover assembly as described in Section 6.5.

3. Remove the guide screw (Figure 6-29).
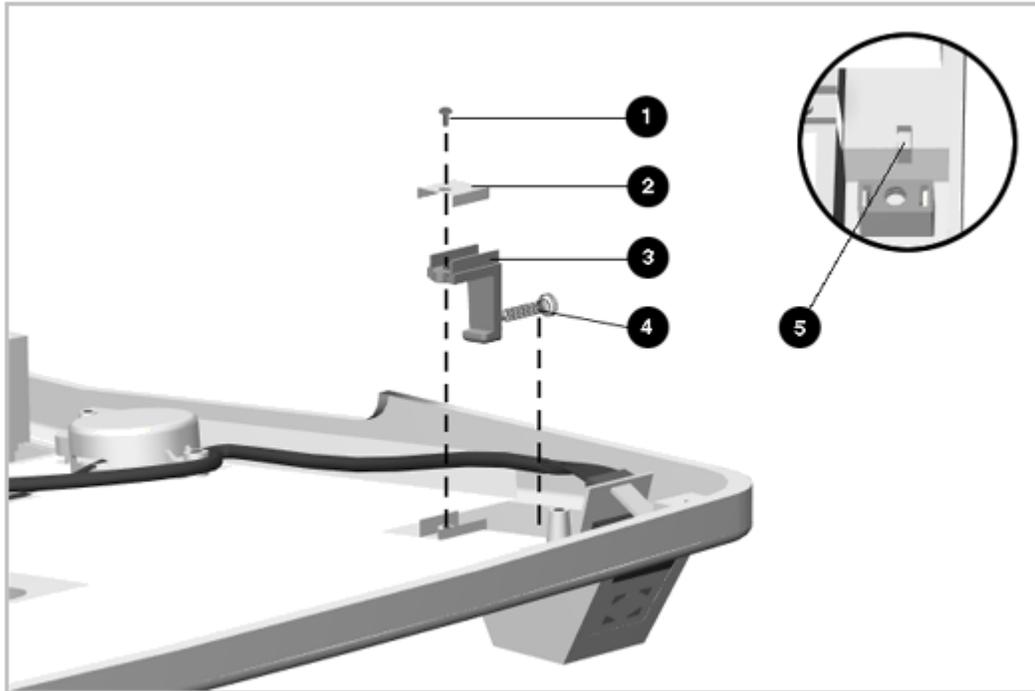
Figure 6-29. Removing the CPU Guide

4. Remove the CPU guide while guiding the spring out of its seat in the side panel of the expansion base (Figure 6-29).

Reverse the above procedure to install the CPU guide. Install the spring in its seat first and make certain it is seated completely. Do not over tighten the screw; the guide must be free to slide under the screw head.

Chapter 6.17 Monitor Support Cover Cap

The bottom cover must be removed before removing the monitor support cover cap. The monitor support cover cap and spring snap into place. To remove the cap and spring, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 6.3.

2. Remove the bottom cover assembly as described in Section 6.5.

3. Squeeze the tabs and allow the cap to drop out (Figure 6-30).
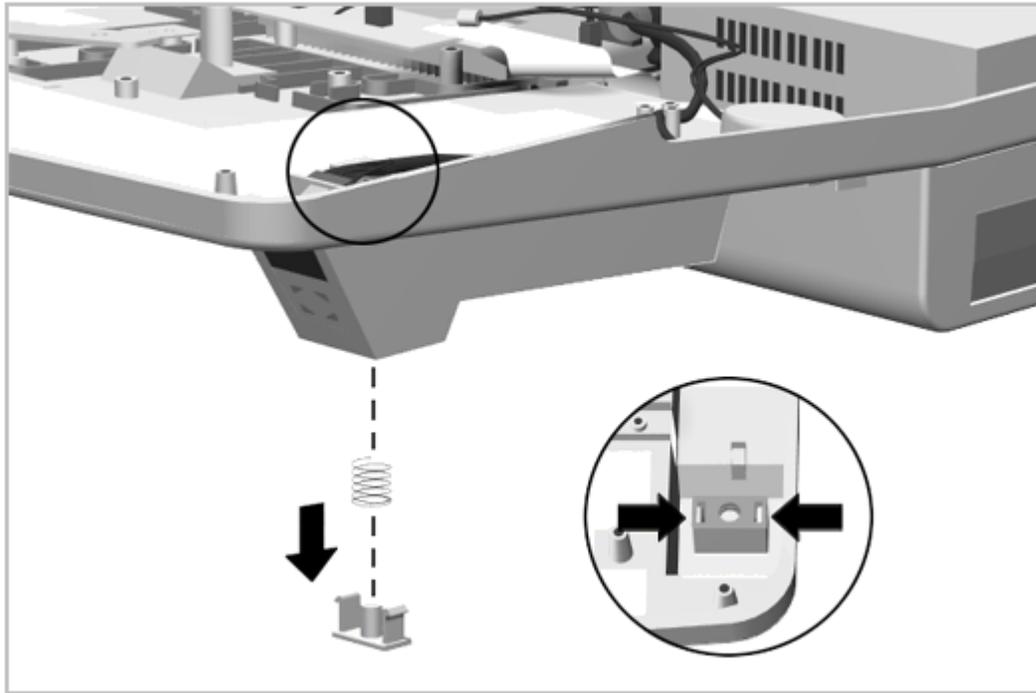
Figure 6-30. Removing the Monitor Support Cover Cap

Reverse the above procedure to install the monitor support cover cap.

Chapter 6.18 Docking Mechanism

The bottom cover assembly must be removed before removing the docking
mechanism. The docking mechanism consists of the:

o Docking lever

o Docking lever cover

o Docking lever shield

o Slide block

o Docking bar

o Docking bar bushing

o Puller plate assembly

o Spring

To remove the docking mechanism, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 6.3.

2. Remove the bottom cover assembly as described in Section 6.5.

3. Remove the main board as described in Section 6.8.

4. Remove the screw and washer [1] that connects the docking bar [2] to the puller plate assembly [3] (Figure 6-31).
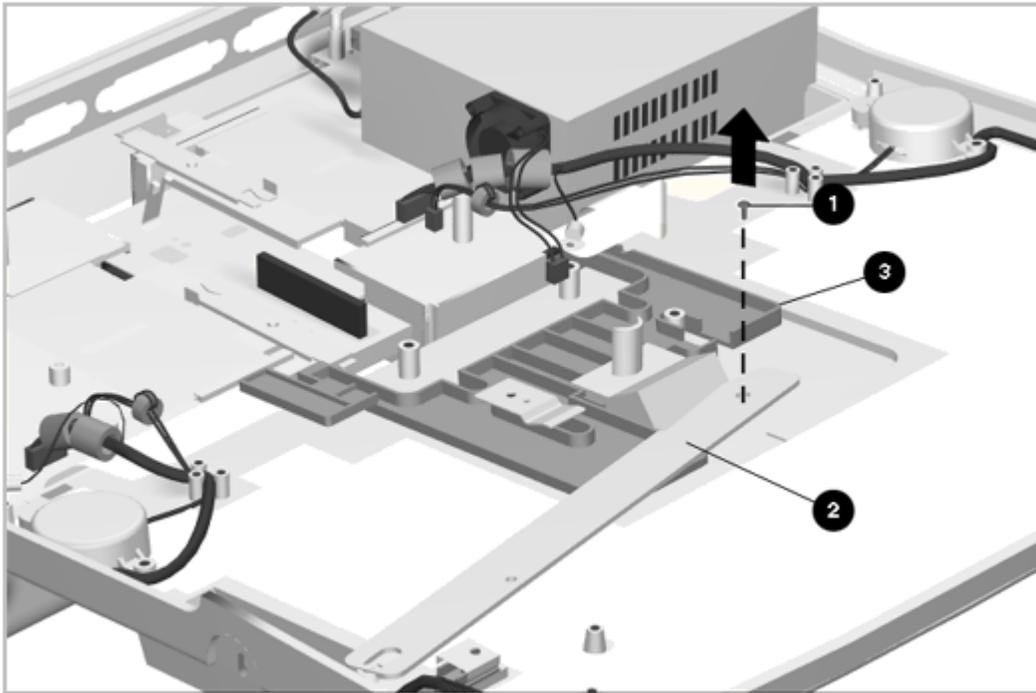
Figure 6-31. Disconnecting the Docking Bar from the Puller Plate

5. Lift the docking bar [1] and its bushing [2] out of the assembly (Figure 6-32).
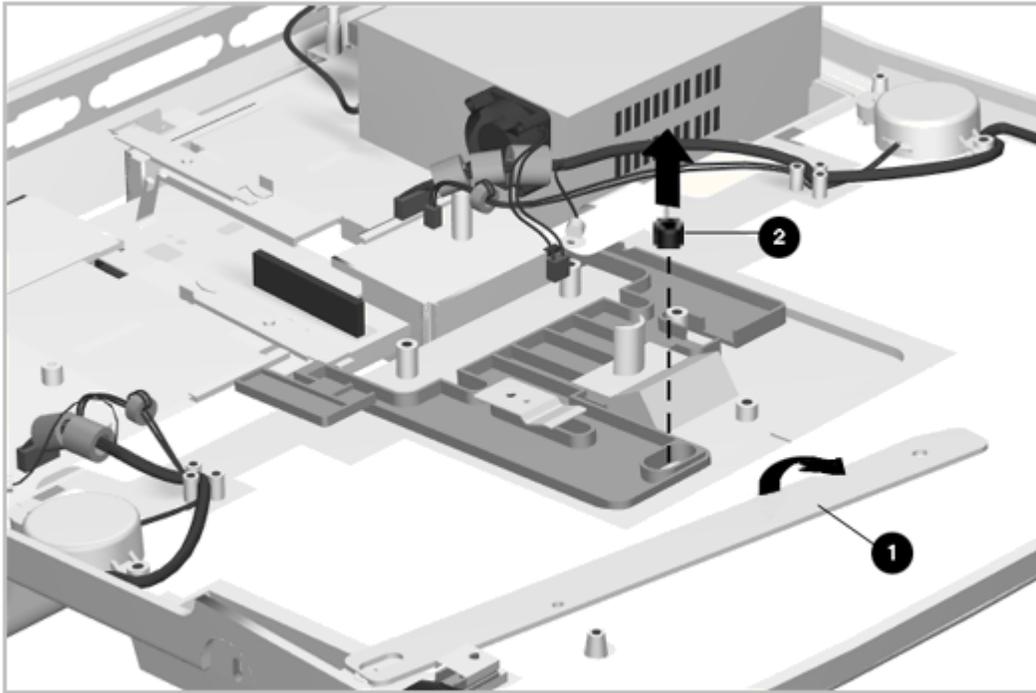
Figure 6-32. Removing the Docking Bar and Bushing

6. Remove the screw from the spring and lift the spring out
   (Figure 6-33).
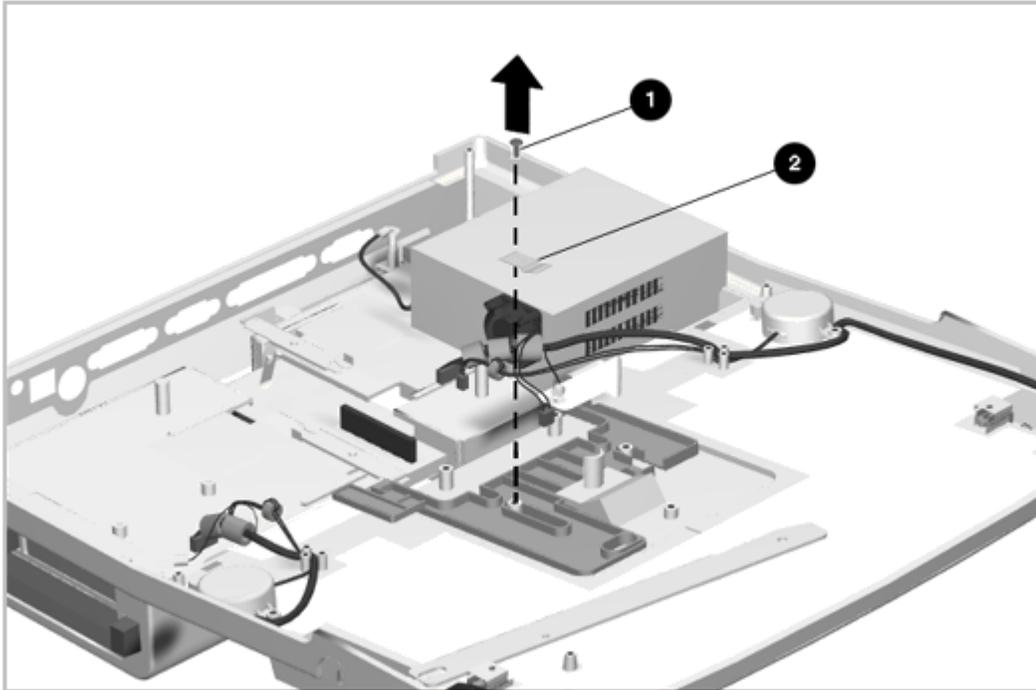
Figure 6-33. Removing the Puller Plate Spring

7. To remove the puller plate assembly [1], see Figure 6-34 and complete
   the following steps:

   a. Slide the puller plate all the way back [2].
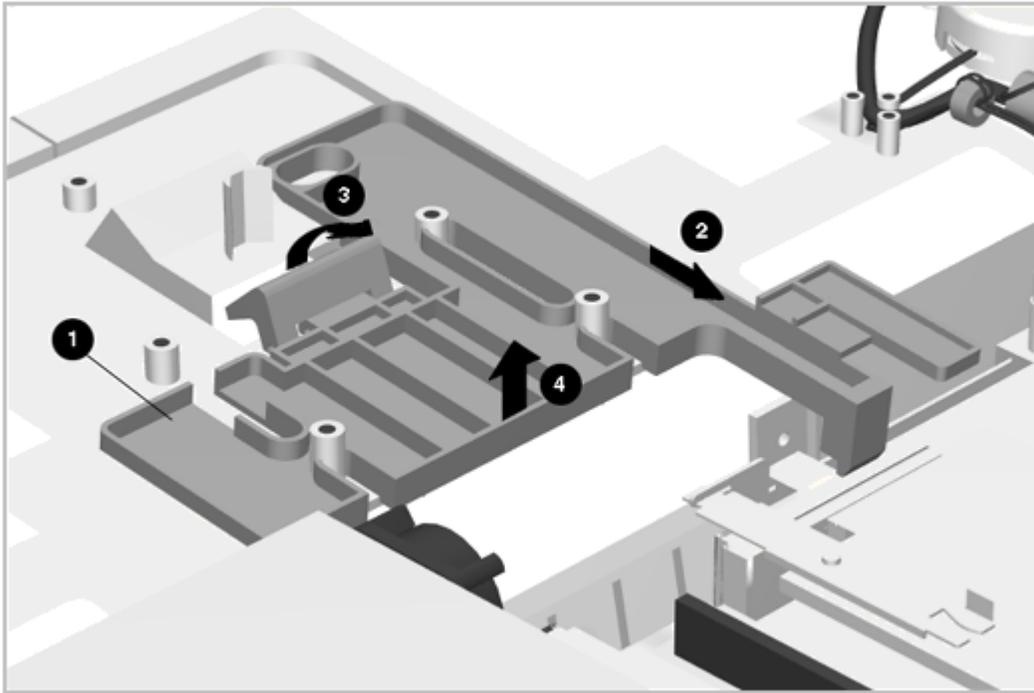
Figure 6-34. Removing the Puller Plate Assembly

   b. Lift the rear of the puller plate [4] and continue to slide back
      while pulling the catch [3] out of the opening in the base.

To install the puller plate assembly, press the docking aid [3] through
the opening and slide the puller plate [1] into place (Figure 6-34).

Reverse the previous procedure to install the docking mechanism. Be sure
to use nylock screws for the docking bar and spring.

Chapter 6.19 Docking Lever and Cover

To remove the docking lever and cover, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 6.3.

2. Remove the bottom cover assembly as described in Section 6.5.

3. Remove the screw and washer that connects the docking bar to the slide
   block and docking lever (Figure 6-35).
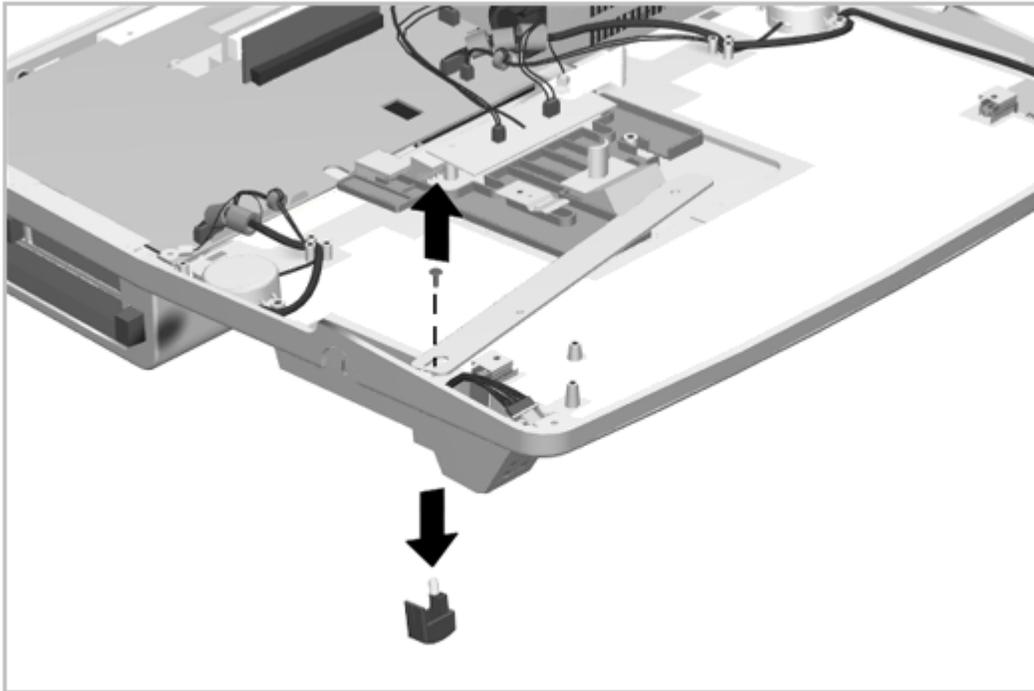
Figure 6-35. Removing the Docking Lever

4. The docking lever slider is now free to be removed [1] (Figure 6-36).
   Note that the little tab on one side of the docking lever slider [2]
   goes toward the outside of the expansion base at reassembly.
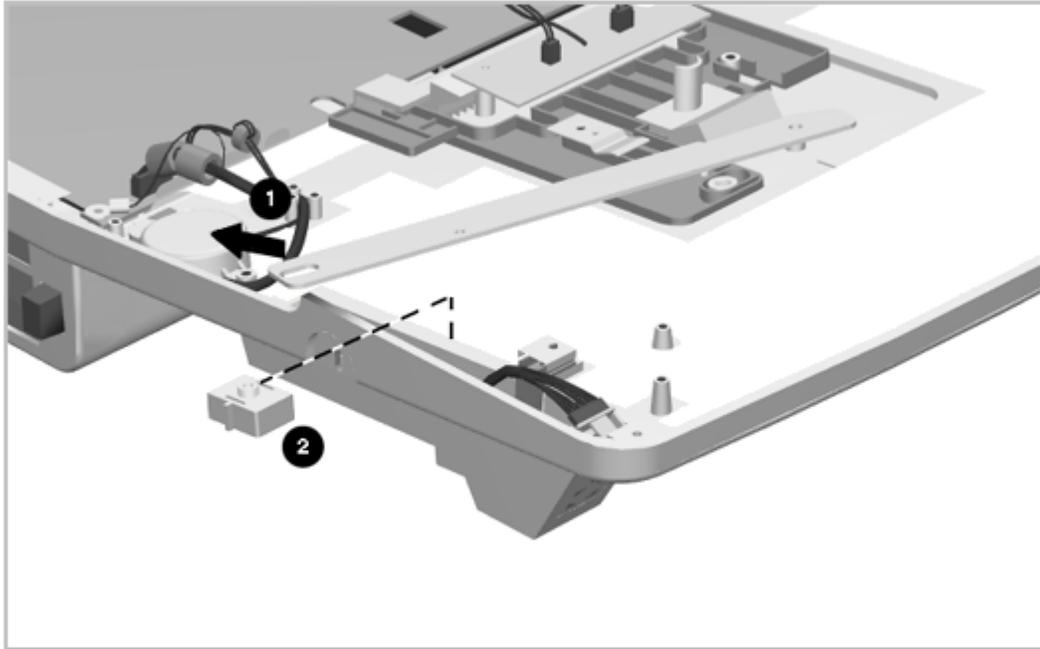
Figure 6-36. Removing the Docking Lever Slider

5. Remove the screws [1] and lift out the docking lever cover [2]
   (Figure 6-37).
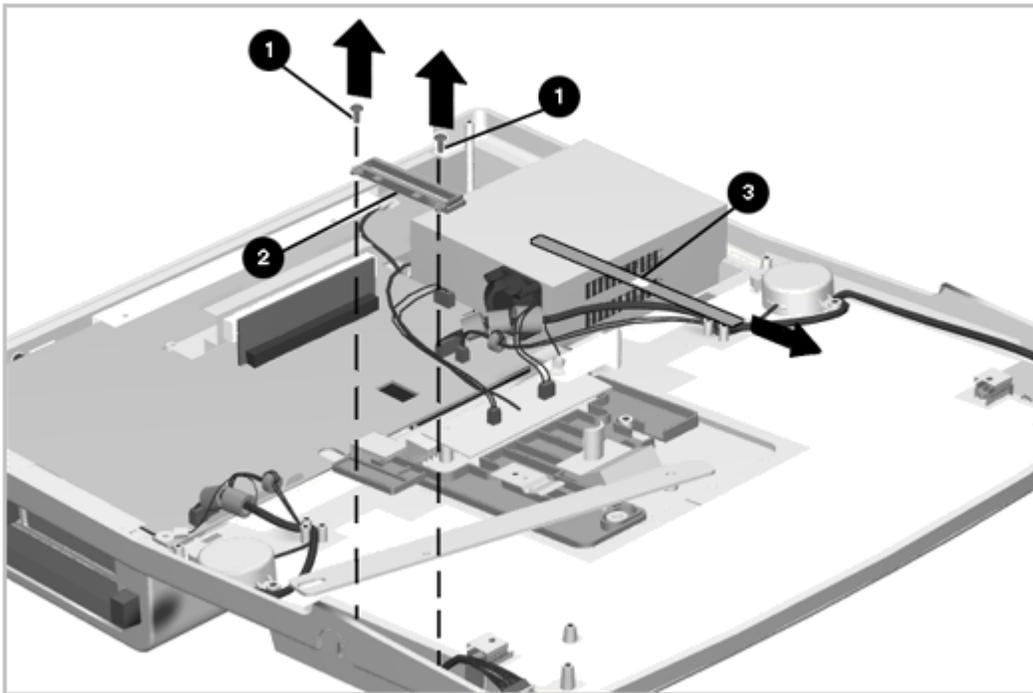
Figure 6-37. Removing the Docking Lever Cover

6. Remove the docking lever cover insert [3] as shown in Figure 6-37.

Reverse the above procedures to install the docking lever, docking lever
slider, or docking lever cover.

Chapter 6.20 Security Lock Bracket

The security lock bracket simply slides into its mounting seat on the side
of the expansion base. To remove and install the security lock bracket,
complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 6.3.

2. Remove the bottom cover assembly as described in Section 6.5.

3. Use a flat-blade screwdriver to pry the bracket straight up, or use a
   small pair of pliers to grasp the bracket and pull it out
   (Figure 6-38).
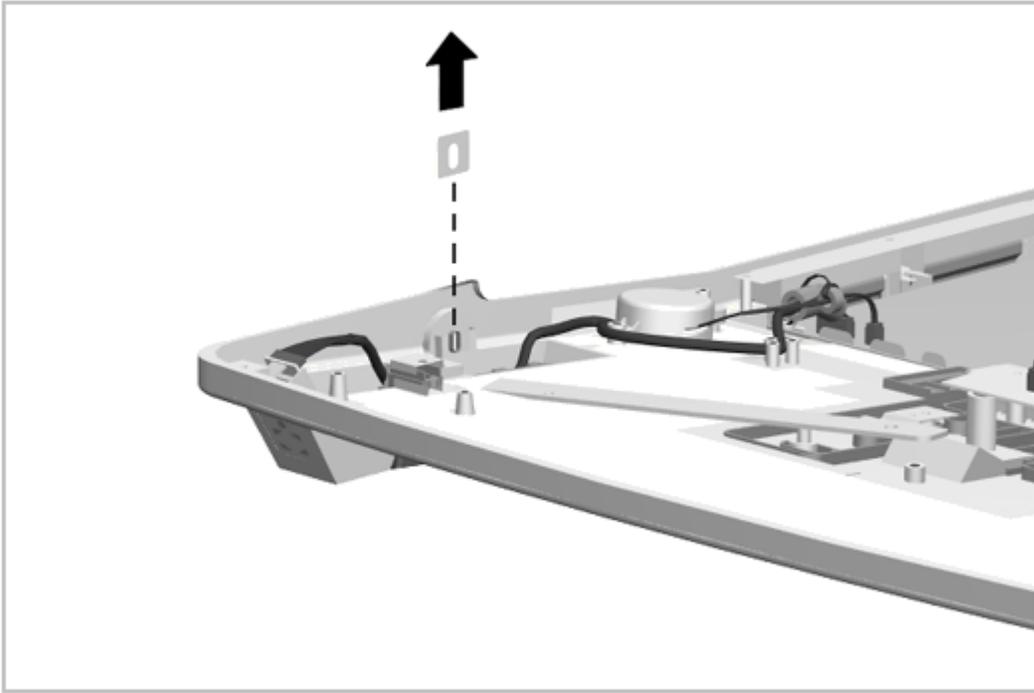
Figure 6-38. Removing the Security Lock Bracket

Chapter 7. MultiBay ISA Expansion Base: Removal and Replacement Procedures

Chapter 7.0 Introduction

This chapter presents the removal and replacement procedures for the MultiBay ISA Expansion Base.

Chapter 7.1 Serial Number

The expansion base serial number should be reported to Compaq when requesting information or ordering spare parts. The serial number is displayed on the rear of the expansion base to the right of the auxiliary fan.

Figure 7-1. MultiBay-ISA Expansion Base Serial Number Location

Chapter 7.2 Disassembly Sequence Chart

Use the chart in Figure 7-2 to determine the section number and disassembly sequence for removing components from the MultiBay ISA Expansion Base.

```
7.3 Preparing for Disassembly
        6.3.1 Undocking the Computer
        6.3.2 Disconnecting the Expansion Base
        6.3.3 Battery Pack
        6.3.4 Mass Storage Devices
        6.3.5 PC Card
7.4 Expansion Base Feet
7.5 Bottom Cover Assembly
        7.6 MPEG Connector
        7.7 Power Supply
        7.8 Main Board
                7.9 CPU Connector Bezel
                7.10 MultiBay Assembly
                        7.11 MultiBay Door
                        7.12 PC Card Door Assembly
        7.13 Power Switch Board
        7.14 IrDA Board
        7.15 Speaker Assemblies
        7.16 Aligment Guides
        7.17 Monitor Support Cover Cap
        7.18 Docking Mechanism
        7.19 Docking Lever and Cover
        7.20 Security Lock Bracket
```

Figure 7-2. MultiBay-ISA Expansion Base Disassembly Sequence Chart

Chapter 7.3 Preparing the MultiBay ISA Expansion Base For Disassembly

```
NOTE: It is important that these instructions be followed when installing
      a new expansion base top cover (Service Spare Part Number
      213711-003).

1. Remove the plastic hole cover from the left corner of the top cover.

2. Insert the fan (which is included with the new top cover) in the open
   space.

3. Plug the fan electrical connector to the I/O board, adjacent to the
   power supply.


Before beginning removal and replacement procedures, complete the
following steps:


1. Undock the computer from the expansion base (Section 5.3.1).

2. Disconnect AC power and any external devices (Section 7.3.1).

3. Remove the battery pack(s) (Section 7.3.2).

4. Remove the mass storage devices (Section 7.3.3).
```

5. Remove any PC Cards (section 7.3.4).

7.3.1 Undocking the Computer

See Section 5.3.1 for instructions on how to undock the computer from the
expansion base.

7.3.2 Disconnecting the Expansion Base

1. Turn off the expansion base and undock the computer if it is docked in
   the expansion base. See Section 5.3.1 for detailed instructions.

2. Disconnect the power cord from the AC source and from the expansion
   base.
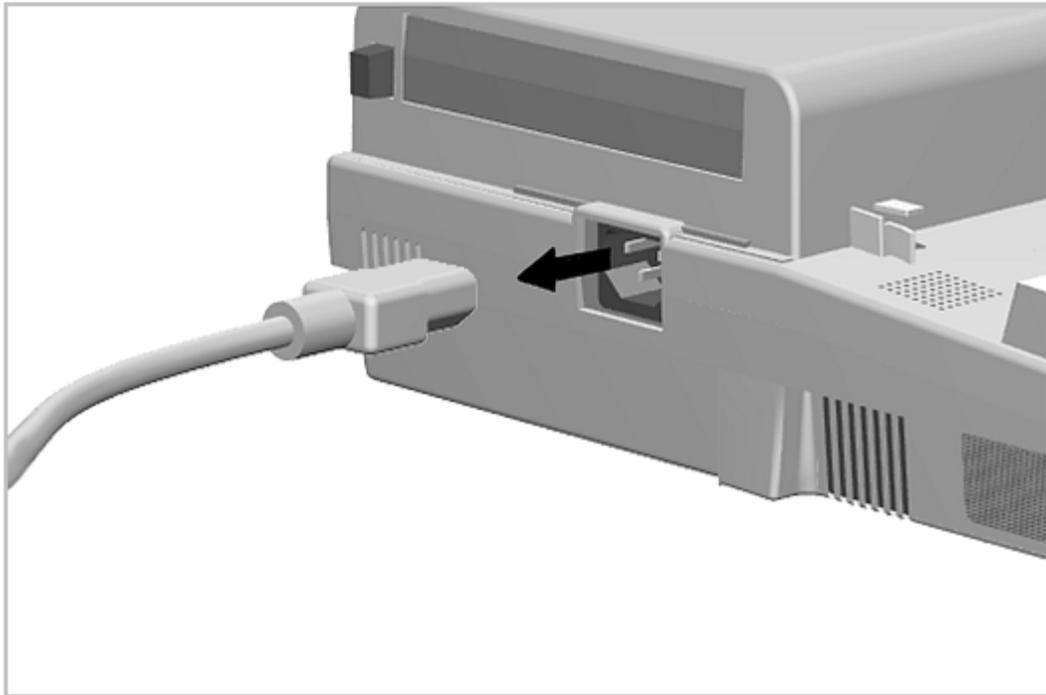
Figure 7-3. Disconnecting the Expansion Base

3. Disconnect all peripheral devices from the expansion base.

4. Complete the preparation for disassembly by performing the procedures
   described in Sections 7.3.3 through 7.3.5.

7.3.3 Battery Pack

All battery packs should be removed from the expansion base before
performing any internal maintenance.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> WARNING <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Metal objects can damage the battery pack as well as the battery contacts
in the battery compartment. To prevent damage, do not allow metal objects
to touch the battery contacts. Place only the battery pack for the Compaq
LTE 5000 Personal Computer into the battery compartment. Do not force the
battery pack into the bay if insertion does not occur easily.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> CAUTION <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Do not crush, puncture, or incinerate the battery pack. Do not open a
battery pack, as this damages the pack, makes it unusable, and exposes
potentially harmful battery components. There are no field-serviceable
parts located inside the battery pack.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Removing the Battery Pack

To remove a battery pack from the expansion base, complete the following
steps:

1. Push the release button [1] to eject the battery pack [2] from the bay
   (Figure 7-4).

Figure 7-4. Removing a Battery Pack from a MultiBay

2. Move the sliding panel on the front of the battery to the left.

Installing a Battery Pack

To install a battery pack into a MultiBay, complete the following steps:

1. With the label facing up and the connectors facing in, align the left side of the battery pack with the left side of the MultiBay, and push the battery pack into the MultiBay until it is seated.

2. Move the sliding panel on the front of the battery pack to the right to cover the MultiBay opening.

7.3.4 Mass Storage Devices

Removing a Mass Storage Device

To remove mass storage devices from the expansion base, complete the following steps:

1. Save and close any files that reside on the drive that is to be removed.

2. If the mass storage device is a diskette drive or CD-ROM drive, remove
   the diskette or CD from the drive.

3. Push the MultiBay device release button [1] and remove the device
   [2] from the bay (Figure 7-5).

Figure 7-5. Removing a Mass Storage Device

Installing a Hard Drive

Only hard drives that are configured for use as a secondary drive can be
used in MultiBay II of the expansion base. Drives without secondary drive
capability can be used only in MultiBay I of the expansion base. These
drives are labeled appropriately. See Appendix C of this manual for more
details.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> CAUTION <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Removable drives should only be inserted in or removed from the expansion
base when the computer is turned off. Failure to follow this precaution
can result in damage to the drive and expansion base and cause loss or
corruption of data.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Before a hard drive can be inserted in the expansion base, it must be
placed in a hard drive carrier. To install a hard drive in a carrier and
insert it in the expansion base, complete the following steps:

1. Turn off the expansion base.

2. Make sure the latch inside the carrier is pushed to the right, and place the hard drive in the carrier with the label facing up and the contacts facing the rear of the carrier.

3. Slide the drive toward the rear of the carrier until it is seated (Figure 7-6).

Figure 7-6. Placing a Hard Drive in the Hard Drive Carrier

4. Push the latch inside the carrier to the left to secure the hard drive in place.

5. Align the left side of the carrier with the left side of the MultiBay, and push the carrier into the bay until it is seated.

Installing a Diskette Drive or CD-ROM Drive

To install a diskette drive or CD-ROM drive into the MultiBay, complete the following steps:

1. Turn off the computer.

2. Align the left side of the diskette drive or CD-ROM drive with the left

side of the MultiBay and push the drive into the bay until it is seated.

7.3.5 PC Card

All PC cards should be removed from the expansion base before performing any internal maintenance on the computer.

Removing a PC Card

To remove a PC Card, complete the following steps:

1. Push the PC Card release button [1]. The card [2] ejects out of the card slot (Figure 7-7).
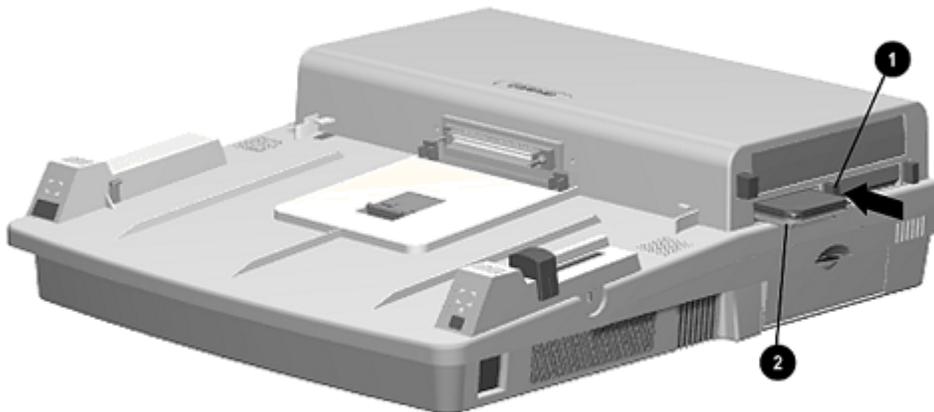
Figure 7-7. Removing a PC Card

2. The PC Card door automatically closes after removing the card.

Installing a PC Card

To install a PC Card, complete the following steps:

1. Push open the PC Card door so you can see the tracks inside.

2. Place the PC Card in the tracks with the card connector to the inside and label up.

3. Slide the card in until it seats. The door remains open while the card device is connected.

Chapter 7.4 Expansion Base Feet

The feet for the expansion base are rectangular, adhesive-backed rubber pads. Install the feet by removing the protective covering from the adhesive back and placing the feet in their positions on the bottom of the expansion base (Figure 7-8).
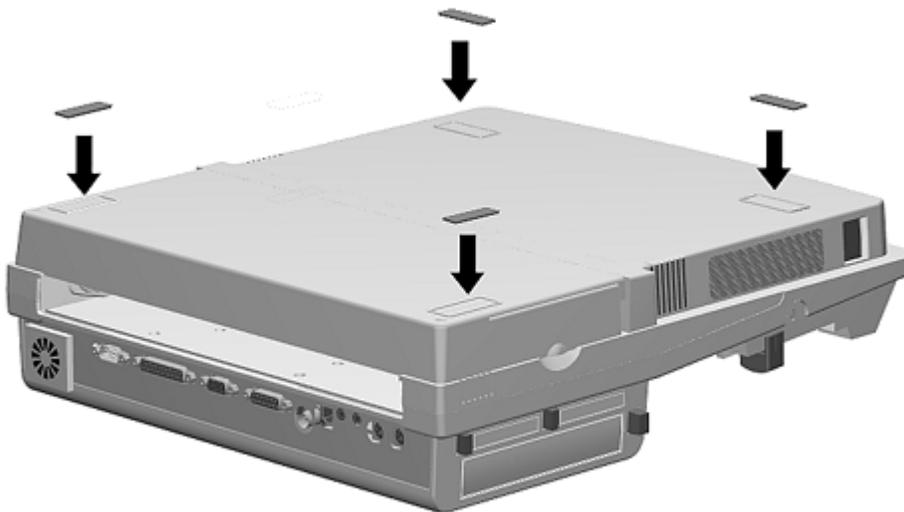
Figure 7-8. Expansion Base Feet

Chapter 7.5 Bottom Cover Assembly

The bottom cover assembly is spared as a unit and consists of:

o Bottom cover

o ISA expansion cover

o Feet

o Labels

The feet are also spared separately. Feet installation is described in
Section 7.4. The feet, labels, and ISA expansion cover are preinstalled.

To remove the bottom cover assembly, complete the following steps:

1. Prepare the expansion base for disassembly as described in
   Section 7.3.

2. Place the expansion base face down on the work surface and remove the
   two screws that secure the ISA expansion cover to the bottom cover
   (Figure 7-9).
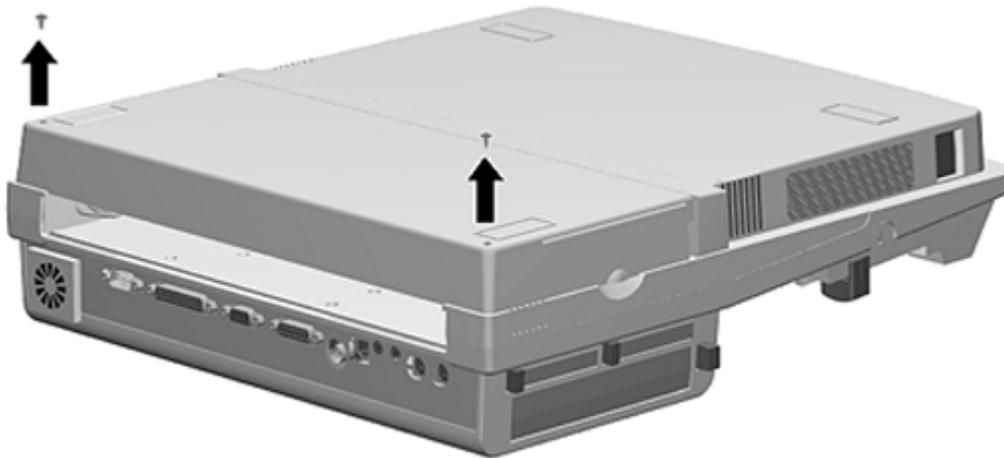
Figure 7-9. Removing the ISA Cover Screws

3. Remove the ISA expansion cover (Figure 7-10)
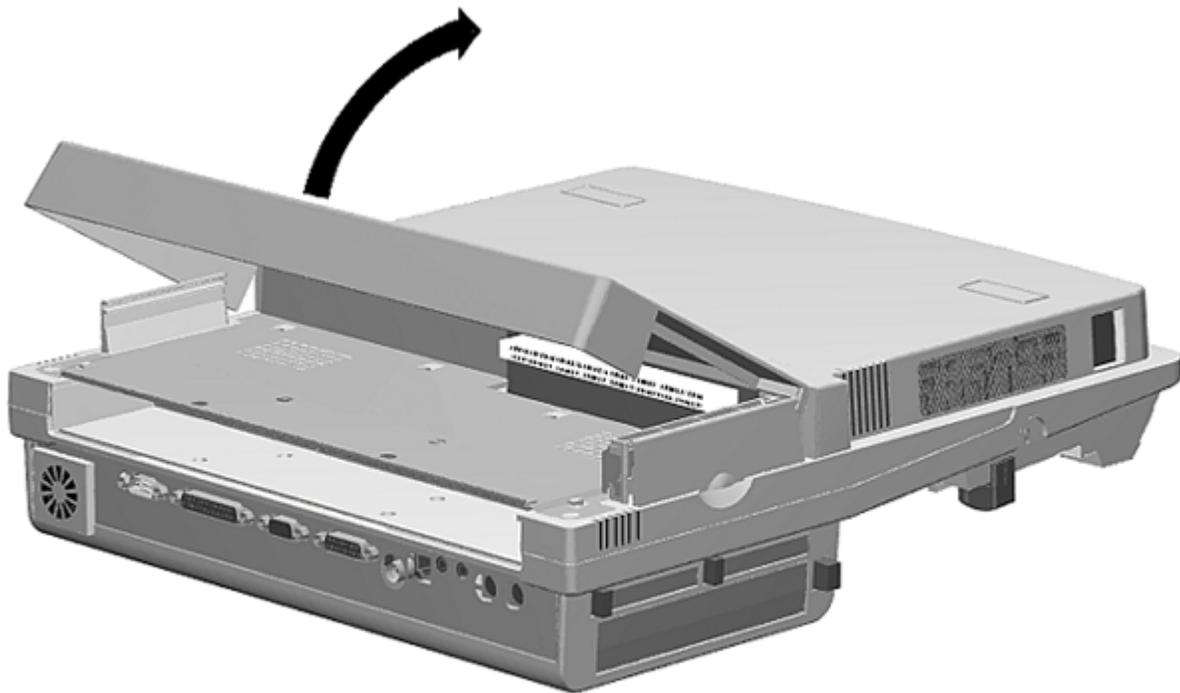
Figure 7-10. Removing the ISA Cover Assembly

4. Remove the one screw in the center of the shield on the bottom cover, remove the shield by sliding it forward and lifting it off the retaining clips, and then remove the remaining ten screws that secure the bottom cover to the expansion base (Figure 7-11).
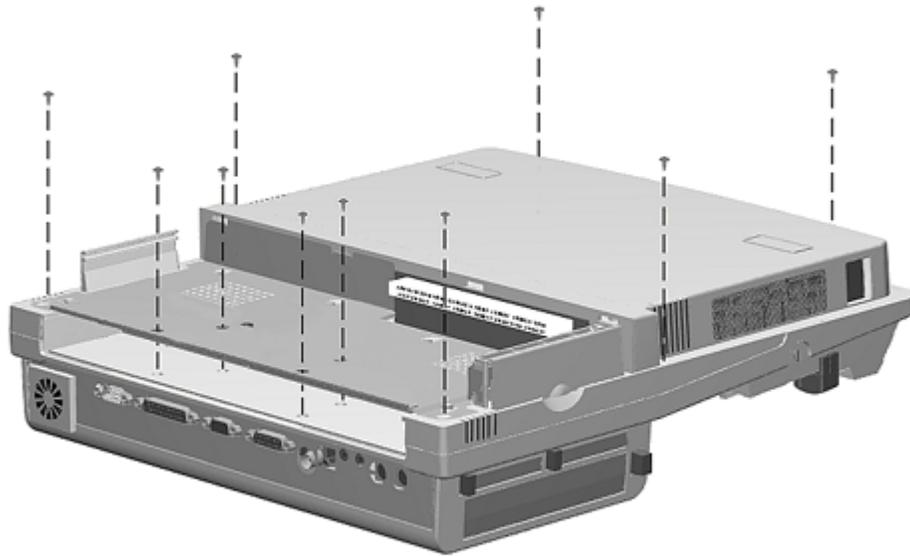
Figure 7-11. Removing the Bottom Cover Screws

5. Lift the bottom cover off the expansion base (Figure 7-12).
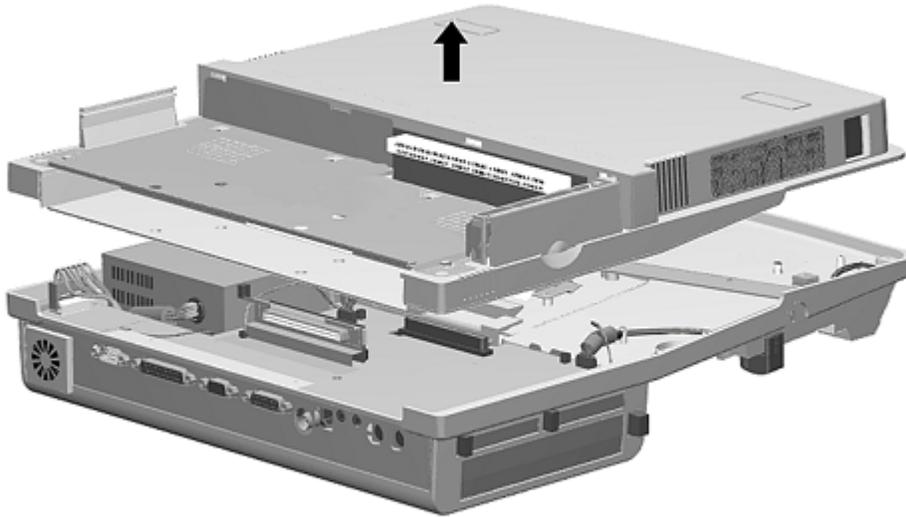
Figure 7-12. Removing the Bottom Cover

6. To remove the ISA connector board, remove the two screws, and remove the board (Figure 7-13).
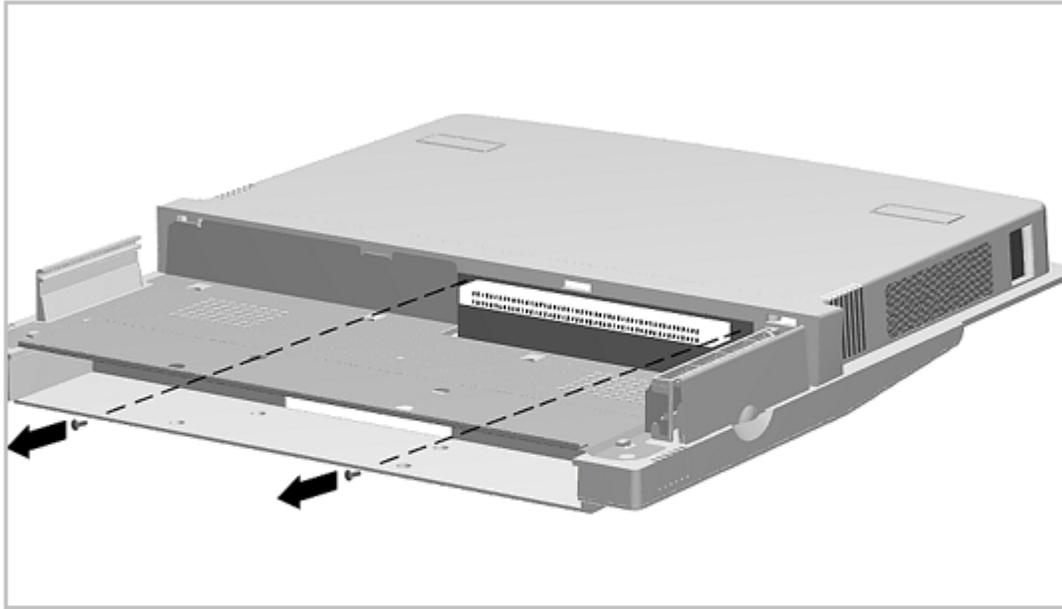
Figure 7-13. Removing the ISA Connector Board

To install the bottom cover assembly, reverse the procedure presented above.

Chapter 7.6 MPEG Connector

The MPEG connector plugs into the main board and is accessed by removing the bottom cover assembly. Remove the bottom cover assembly as described in Section 7.5 and disconnect the MPEG connector from the main board as shown in Figure 7-14.
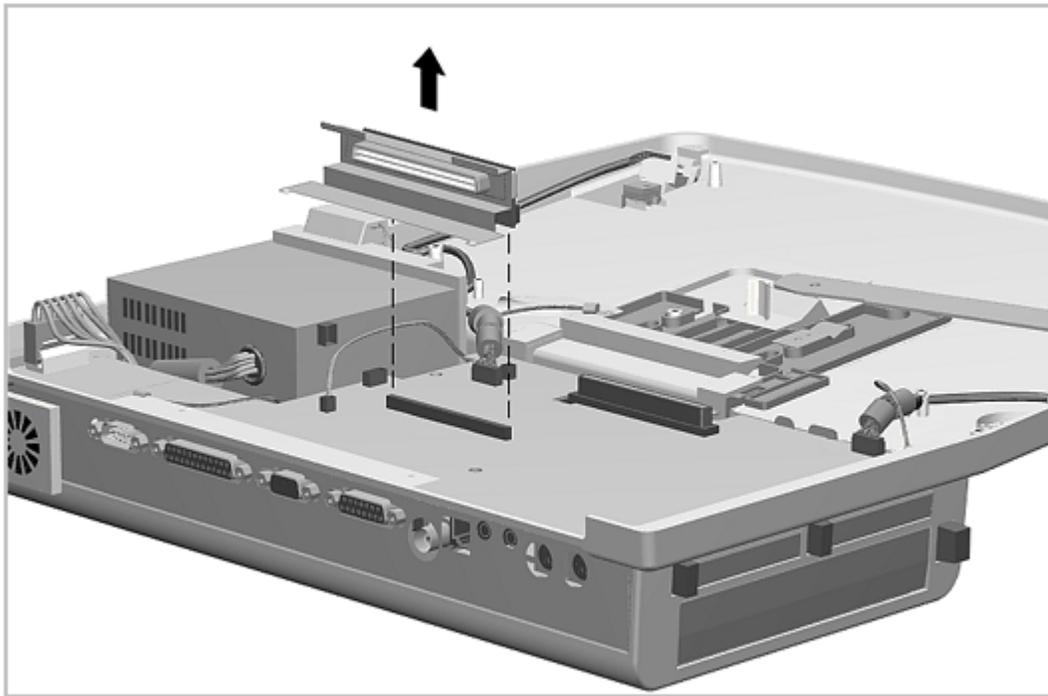
Figure 7-14. Removing the MPEG Connector

Reverse this procedure to install the MPEG connector.

Chapter 7.7 Power Supply

The power supply is mounted in the right rear corner of the expansion base when viewed with the base placed top side down on the work surface. It is replaced as an assembly with its fan.

To remove the power supply, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 7.3.

2. Remove the bottom cover assembly as described in Section 7.5.1.

3. Disconnect the power supply from the main board (Figure 7-15).

4. Disconnect the power supply fan cable from the main board (Figure 7-15).
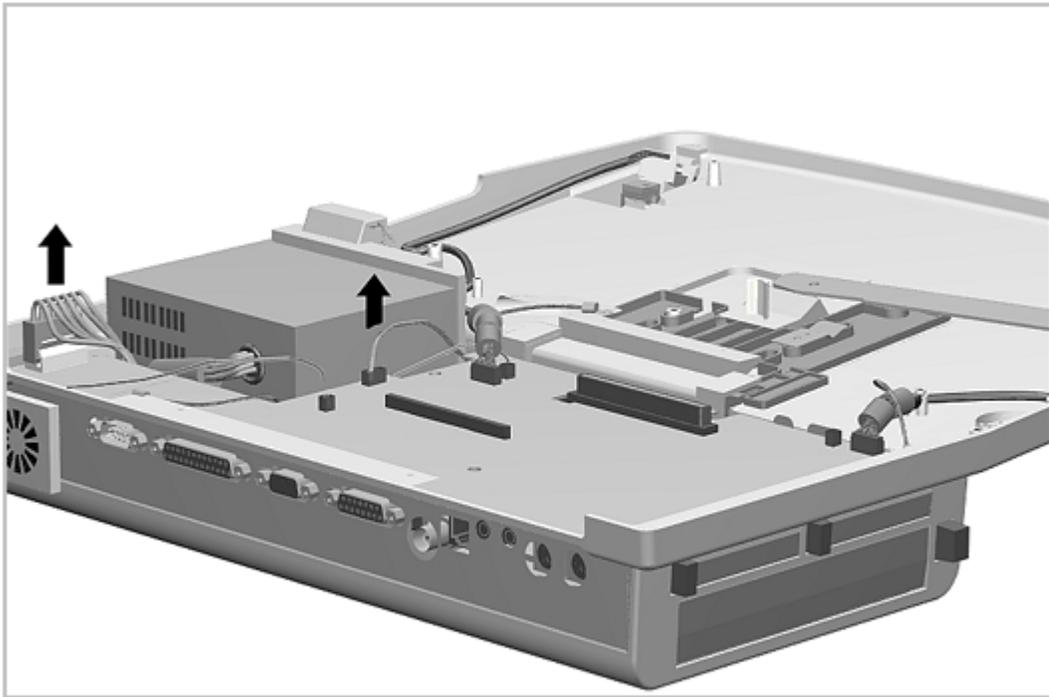
Figure 7-15. Disconnecting the Power Supply

5. Note the routing of the ground wires attached to the rear power supply
   screws. Remove the three screws and lift the power supply out
   (Figure 7-16).
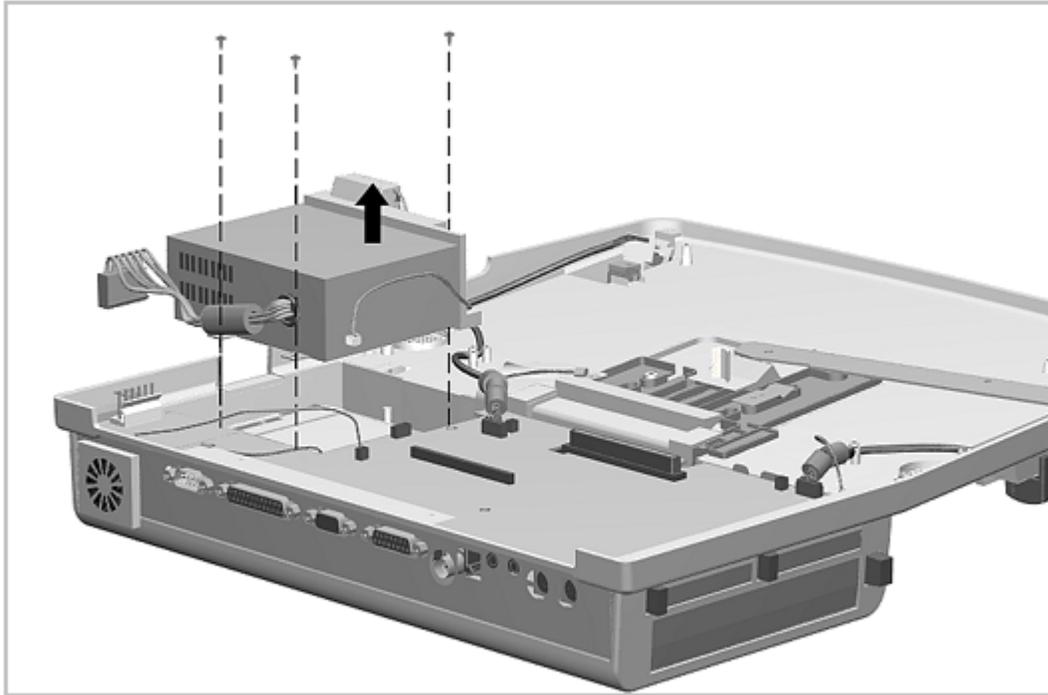
Figure 7-16. Removing the Power Supply Screws and Power Supply

To install the power supply, reverse the procedure presented above. Be
sure to reconnect the ground wire.

Chapter 7.8 Main Board

To remove the main board, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 7.3.

2. Remove the two shoulder screws from the computer connector as shown in
   Figure 7-17.
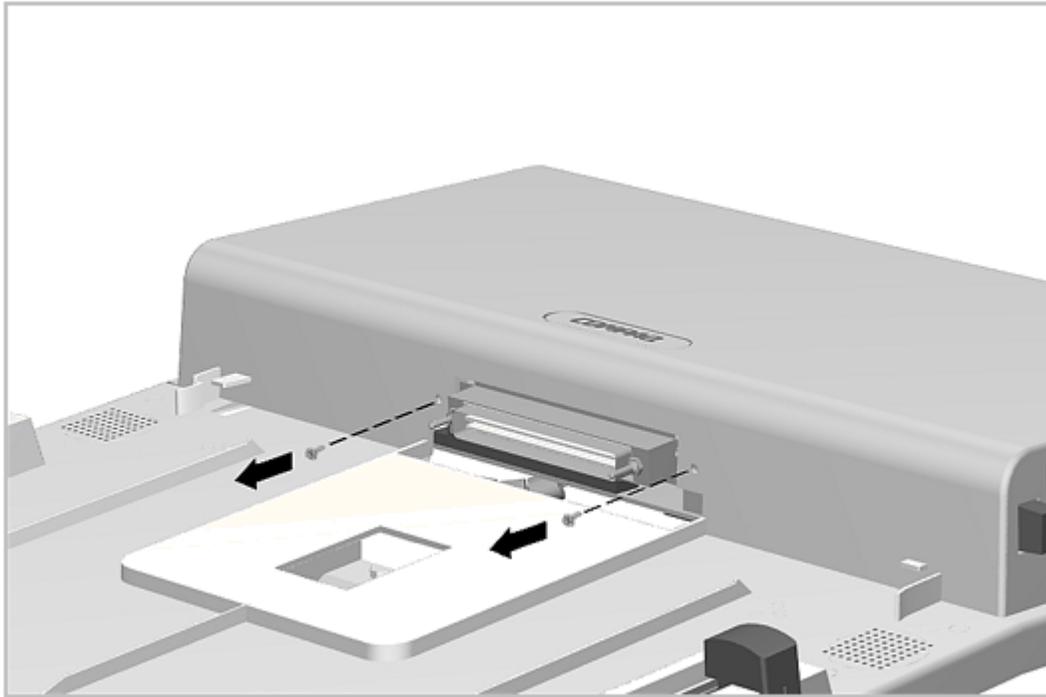
Figure 7-17. Removing the Computer Connector Screws

3. Remove the bottom cover as described in Section 7.5.

4. Note the routing of all cables and disconnect the power supply cable
   [1], the auxiliary fan cables [2], [3], the power supply fan cable [4],
   the IrDA cable [5] , the speaker cables [6], [8], and the power cable
   [7] (Figure 7-18).
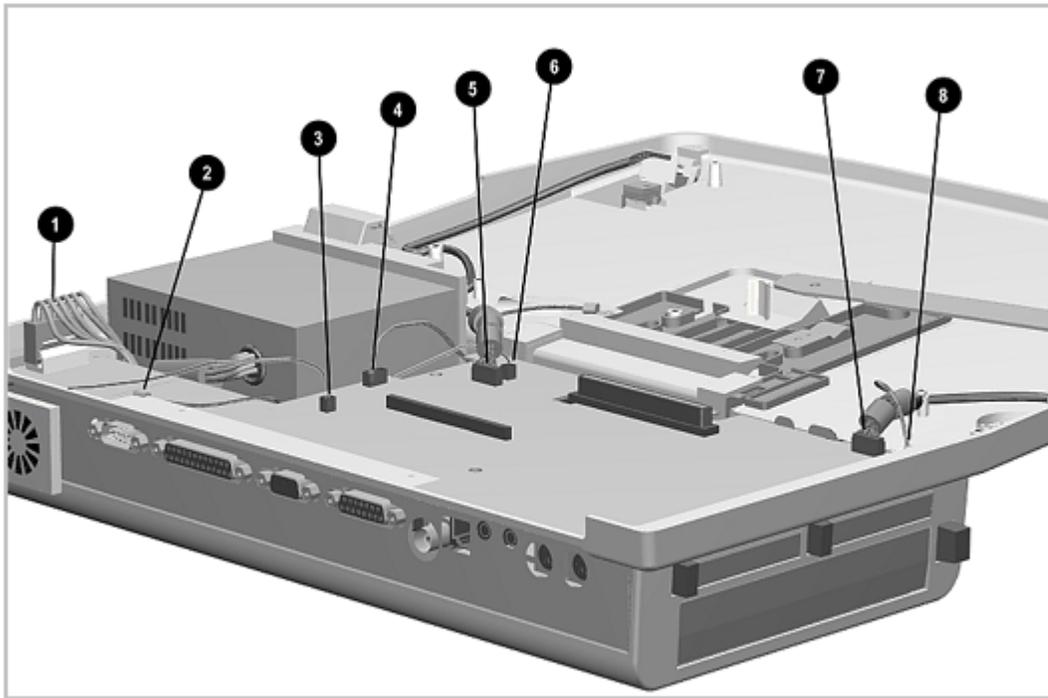
Figure 7-18. Disconnecting and Removing the Main Board Cables

5. Remove the screws from the main board and the two screws from the CPU
   connector bezel (Figure 7-19).
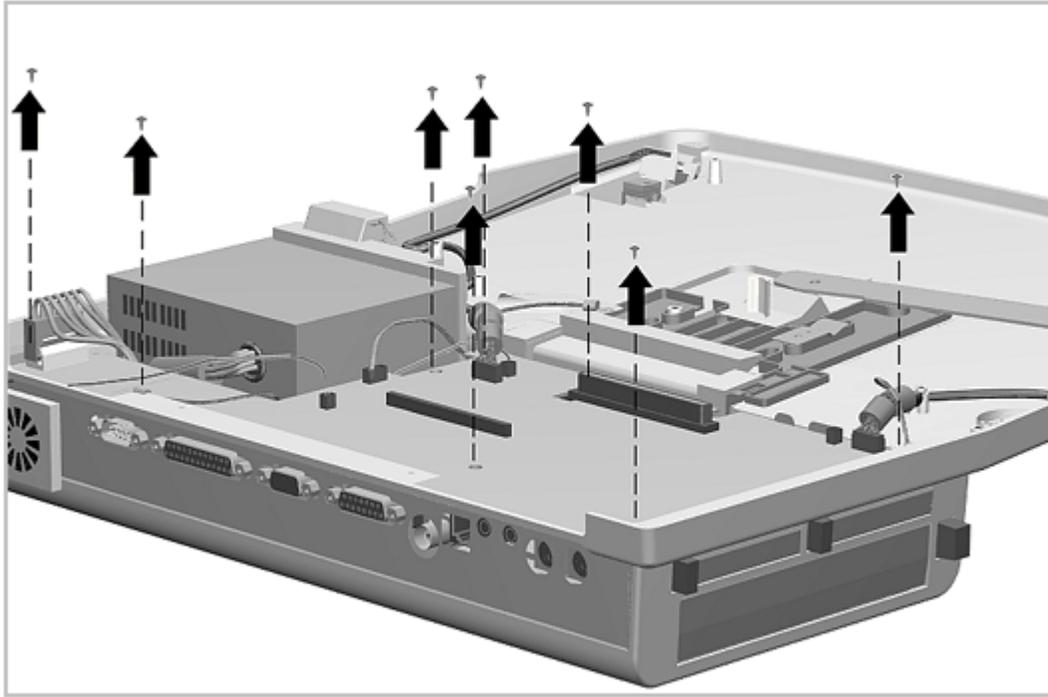
Figure 7-19. Removing the Main Board Screws

6. Lift the main board out of the base. Begin lifting at the front edge of the board [1]. The CPU connector bezel [2] comes off with the board but is not attached to the board. Some manipulation is required around the PC Card door module (Figure 7-20).
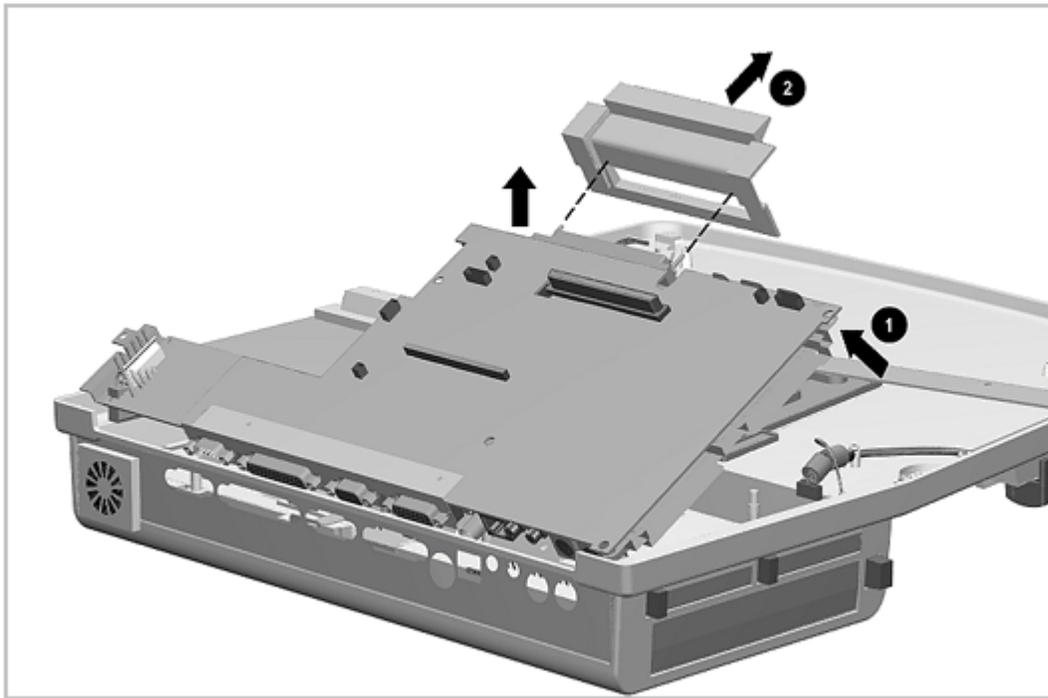
Figure 7-20. Removing the Main Board Assembly

7. To remove the auxiliary fan, release the fan mounting clips and remove the fan from the bottom cover. (Figure 7-21)
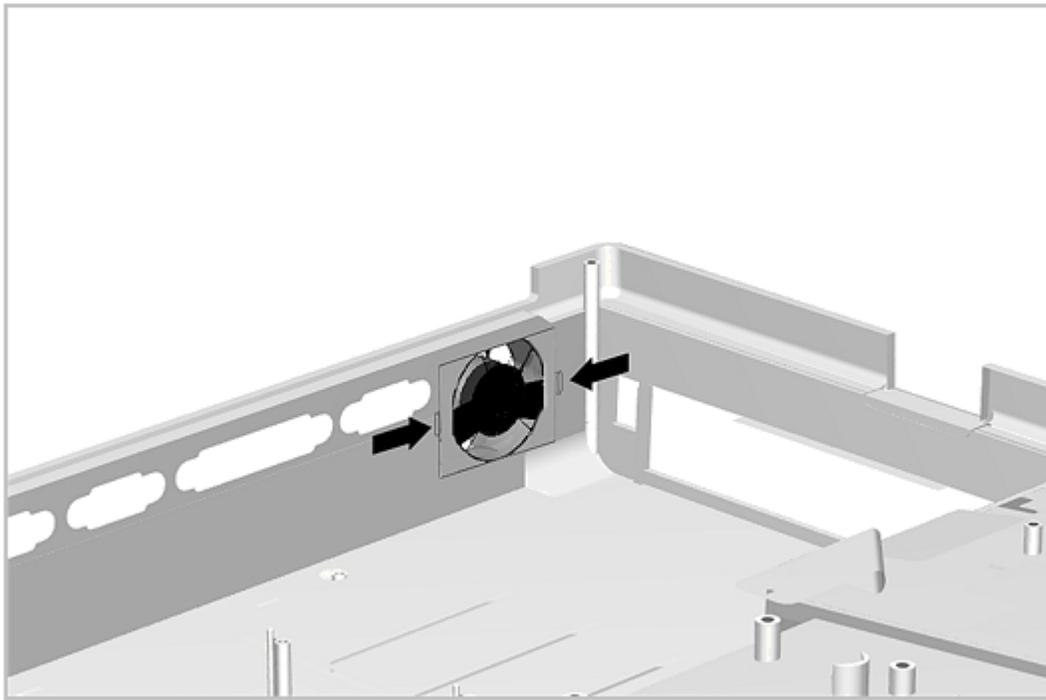
Figure 7-21. Removing the Auxiliary Fan

Reverse the removal procedure described above to install the main board. Position the CPU connector cover in place but do not secure it with screws until the main board is properly seated. Then proceed with the rest of the installation.

Chapter 7.9 CPU Connector Bezel

The main board must be removed to remove and replace the CPU connector bezel. See Section 7.8 for details.

Chapter 7.10 MultiBay Assembly

The main board must be removed before removing a MultiBay assembly.

The MultiBay assembly is spared as part of the top cover assembly. However, the MultiBay assembly may need to be removed in order to access the MultiBay door assembly. To remove a MultiBay, complete the following steps:

1. Remove the three screws and lift the bay out (Figure 7-22).
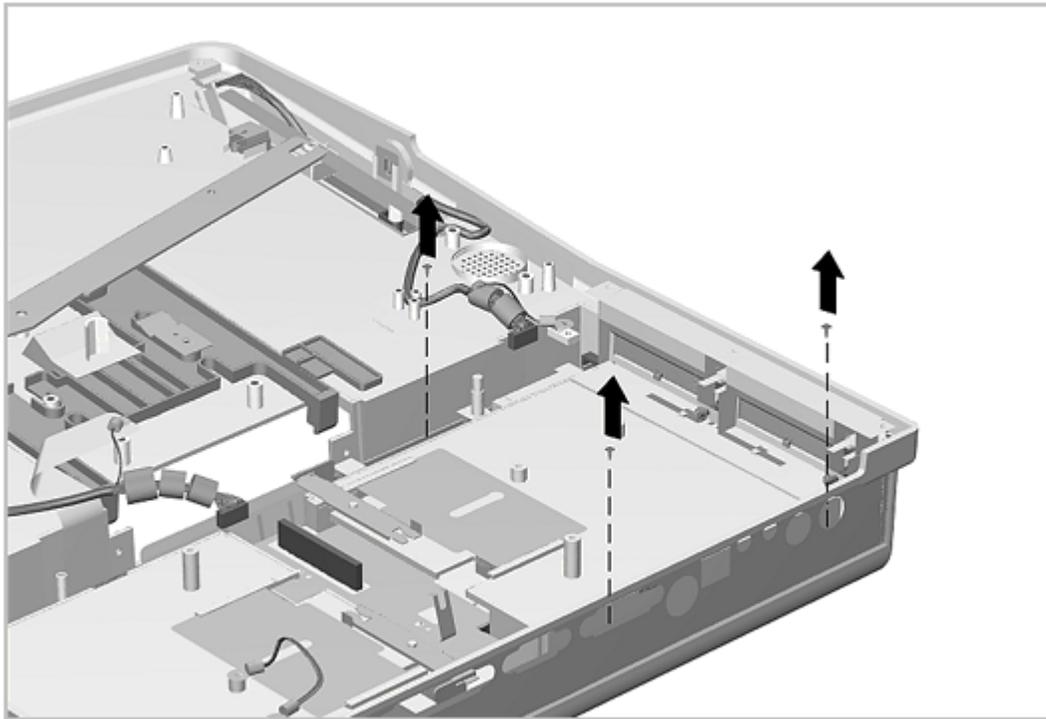
Figure 7-22. Removing the MultiBay Assembly Screws

2. Begin lifting at the end of the assembly toward the MultiBay Connector
   Board and lift the MultiBay assembly out (Figure 7-23).
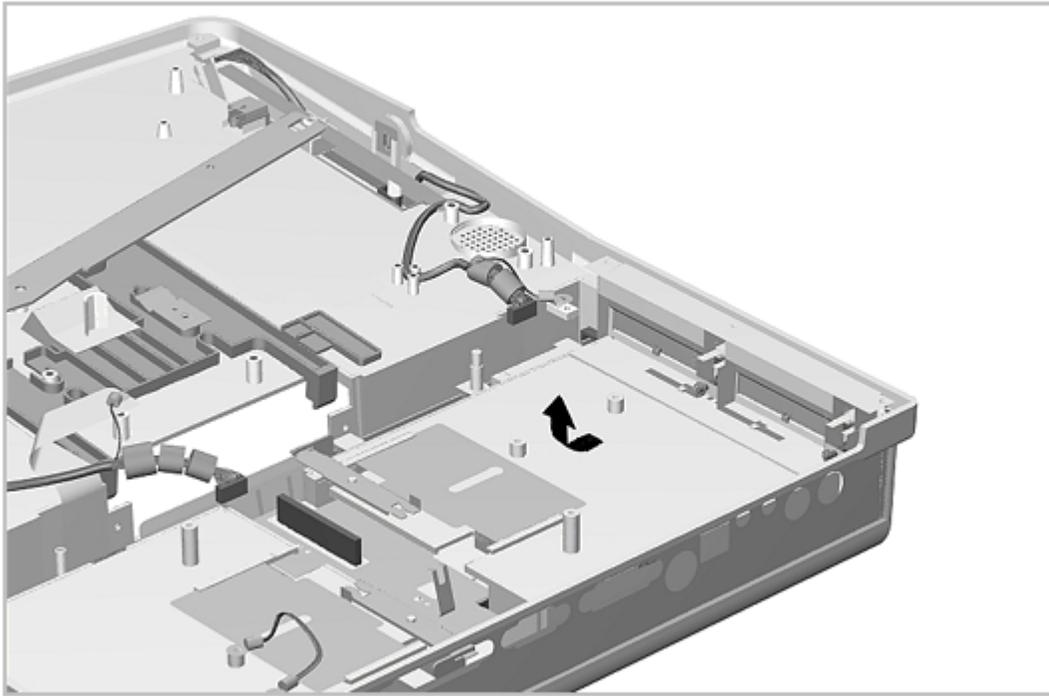
Figure 7-23. Removing the MultiBay Assembly

Reverse the above procedure to install a MultiBay assembly, inserting the
end nearest the MultiBay door first (Figure 7-24). Take care not to damage
the tabs on this end of the MultiBay.
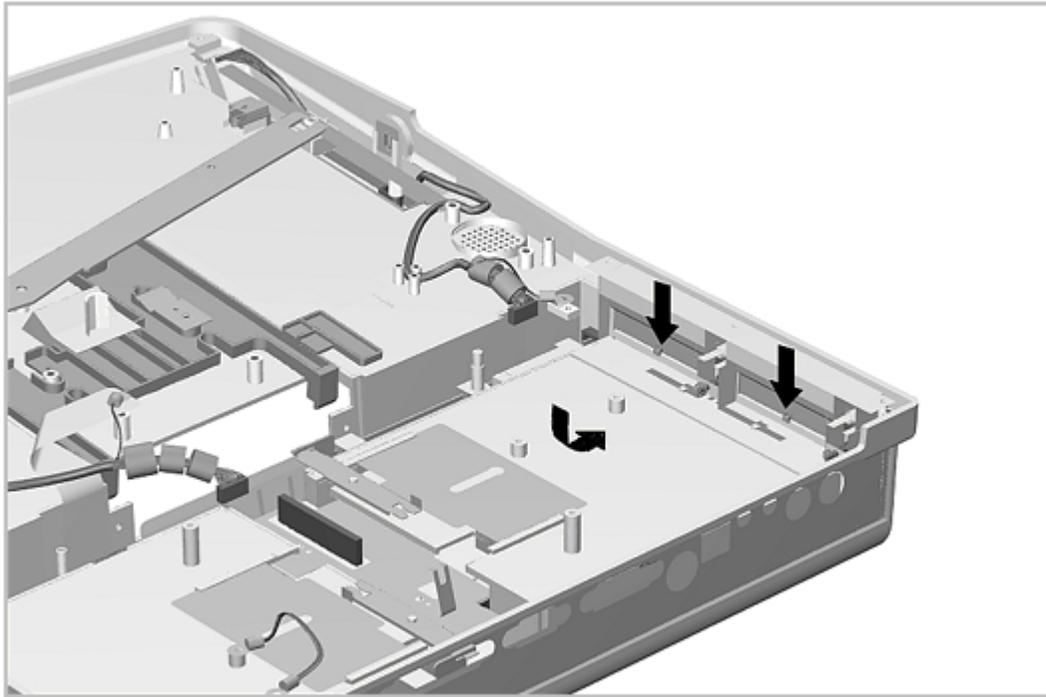
Figure 7-24. Installing the MultiBay Assembly

Chapter 7.11 MultiBay Door

The main board and one of the MultiBays must be removed before removing
the MultiBay door assembly. To remove a MultiBay door assembly, complete
the following steps:

1. Prepare the expansion base for disassembly as described in Section 7.3.

2. Remove the bottom cover assembly as described in Section 7.5.

3. Remove the power supply as described in Section 7.7 if servicing the
   door on that side.

4. Remove the main board as described in Section 7.8 if servicing the door
   on that side.

5. Remove the appropriate MultiBay assembly as described in Section 7-10.

6. Remove the MultiBay door by flexing the door [2] away from the expansion
   base as shown in Figure 7-25. Note the orientation of the spring [1];
   this is important since it maintains the door in a closed position.
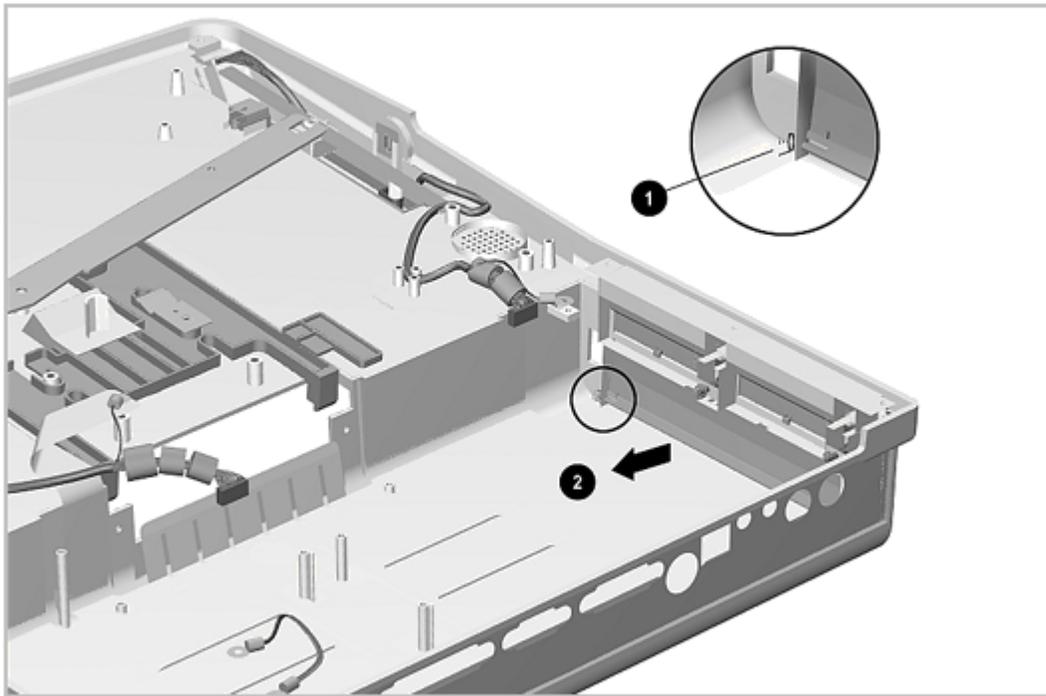
Figure 7-25. Removing the MultiBay Door

Chapter 7.12 PC Card Door Assembly

The main board must be removed before removing the PC Card door assembly.
The PC Card doors are spared as an assembly, mounted in a common frame. To
remove and replace the PC Card doors, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 7.3.

2. Remove the bottom cover assembly as described in Section 7.5.

3. Remove the main board as described in Section 7.8.

4. Remove the three screws and lift the PC Card door module out of the
   bottom cover assembly (Figure 7-26).
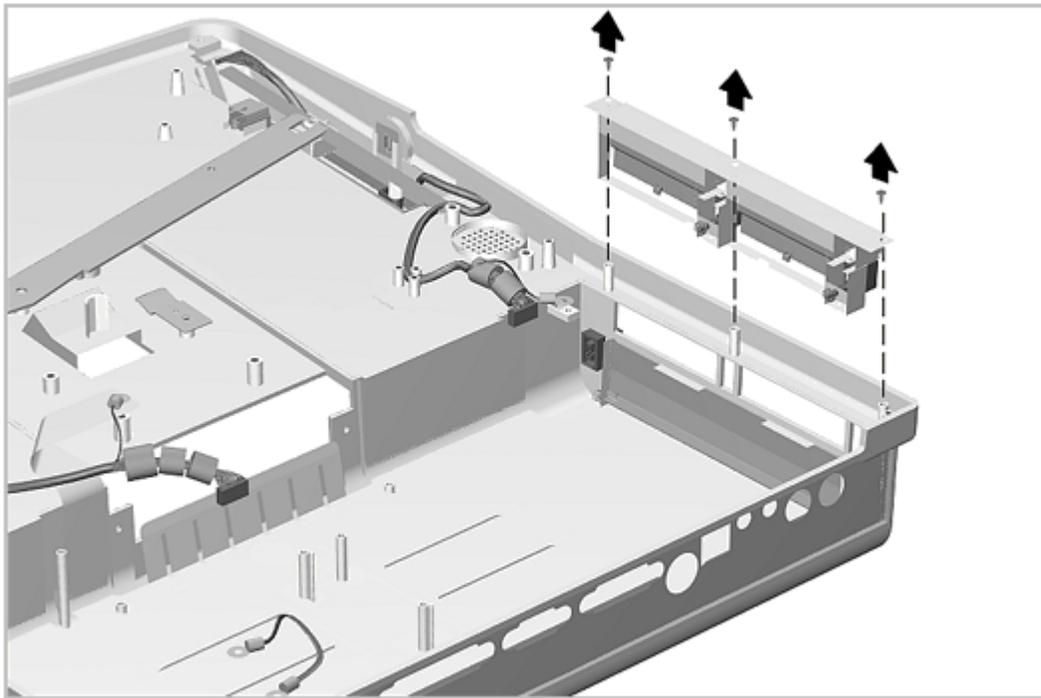
Figure 7-26. Removing the PC Card Door Assembly

Reverse the above procedure to install the PC Card door assembly.

Chapter 7.13 Power Switch Board

The bottom cover assembly must be removed before removing the power switch
board. The power switch board is installed as a unit with its cable
permanently attached.

To remove the power switch board, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 7.3.

2. Remove the bottom cover as described in Section 7.5.

3. Disconnect the power switch board cable and ground wire from the main
   board (Figure 7-27).
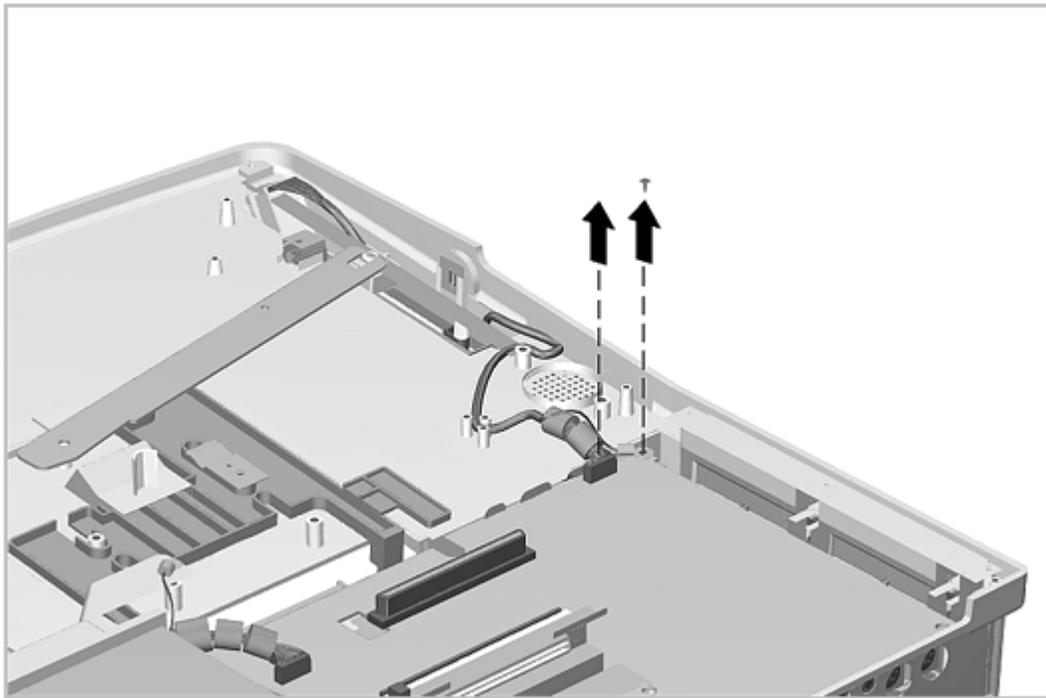
Figure 7-27. Disconnecting the Power Switch Board

4. Remove the screw holding the power switch board in place and lift the
   board out (Figure 7-28).
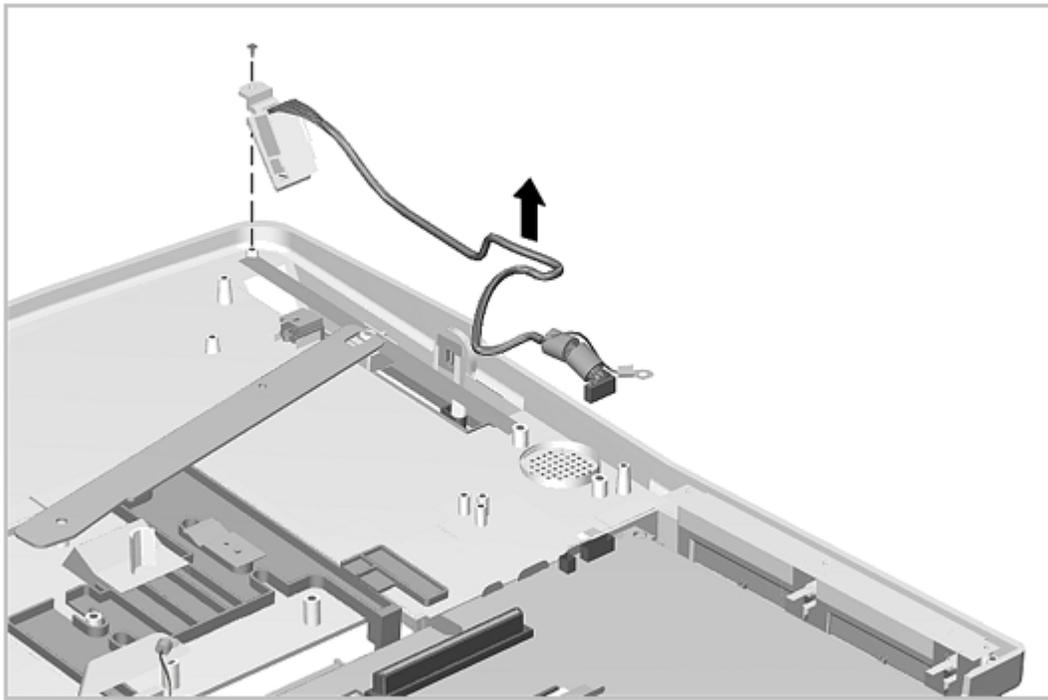
Figure 7-28. Removing the Power Switch Assembly

Reverse the above procedure to install a power switch board.

Chapter 7.14 IrDA Board

The bottom cover assembly must be removed before removing the IrDA board.
The IrDA board is installed as a unit with its cable permanently attached.

To remove the IrDA board, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 7.3.

2. Remove the bottom cover assembly as described in Section 7.5.

3. Disconnect the IrDA board cable and ground wire from the main board
   (Figure 7-29).
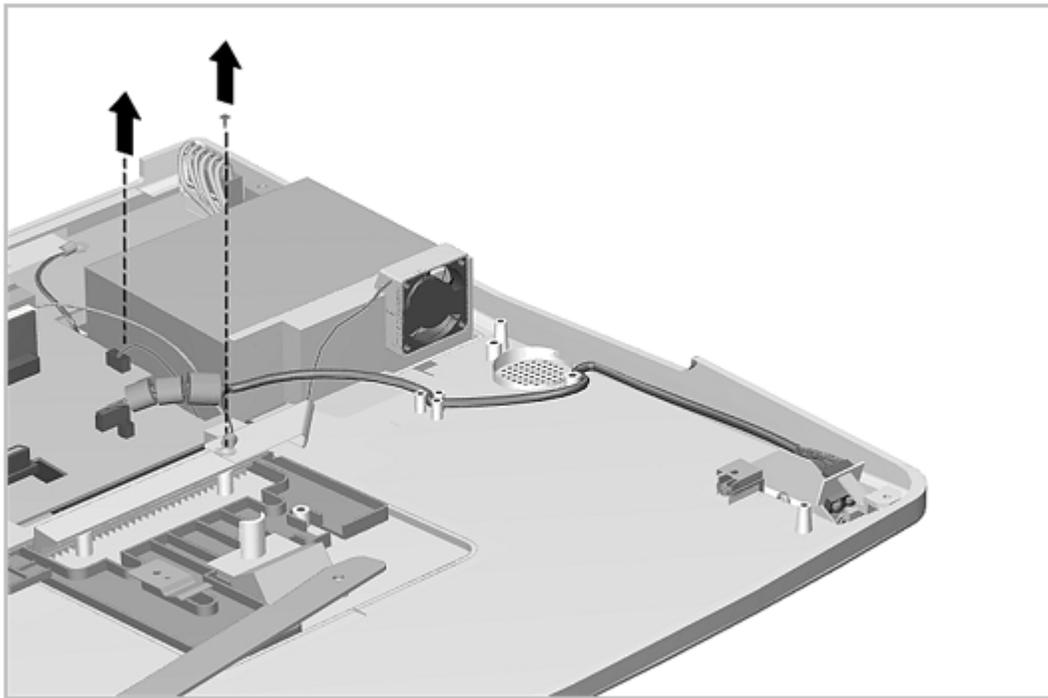
Figure 7-29. Disconnecting the IrDA Board

4. Remove the screw holding the IrDA board in place and lift the board out (Figure 7-30).
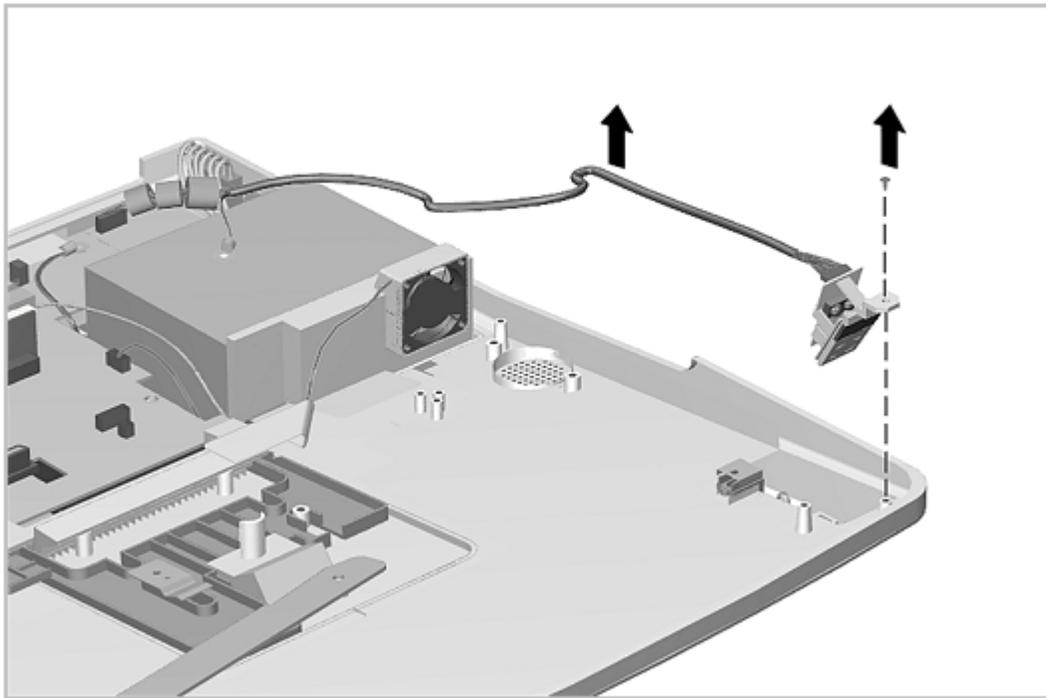
Figure 7-30. Removing the IrDA Board

Reverse the above procedure to install the IrDA board.

Chapter 7.15 Speaker Assemblies

The bottom cover assembly must be removed before removing the speaker
assemblies. The speaker assemblies are installed as a unit with their
cables permanently attached.

To remove the speaker assemblies, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 7.3.

2. Remove the bottom cover assembly as described in Section 7.5.

3. Note the cable routing and disconnect the speaker cables from the
   connector board (Figure 7-31).

4. Remove the four screws from the speaker mounting brackets and lift the
   speaker out of the bottom cover assembly (Figure 7-31).
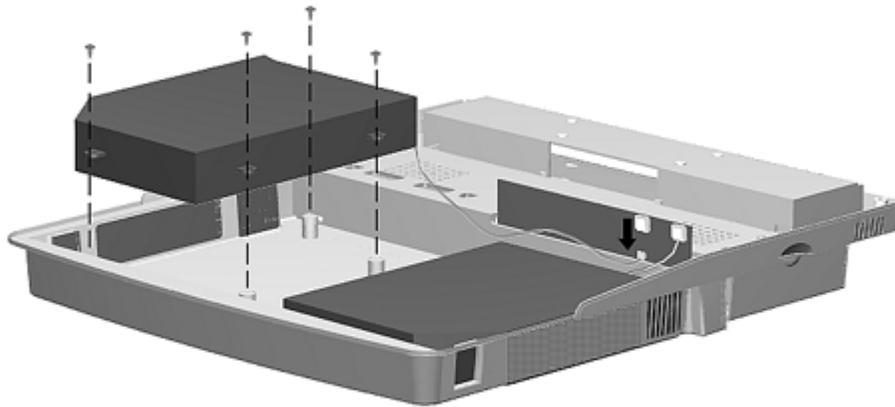
Figure 7-31. Removing the Speaker Assemblies

Reverse the above procedure to install a speaker assembly, paying
particular attention to the cable routing.

Chapter 7.16 Alignment Guides

The bottom cover assembly must be removed before removing the alignment
guides. The alignment guide assembly consists of the guide, spring, and
bracket.

IMPORTANT: The left alignment guide and right alignment guide are keyed
          for proper installation.

The assembly is mounted to the expansion base with one screw. To remove
the CPU guide assembly, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 7.3.

2. Remove the bottom cover assembly as described in Section 7.5.

3. Remove the guide screw (Figure 7-32).
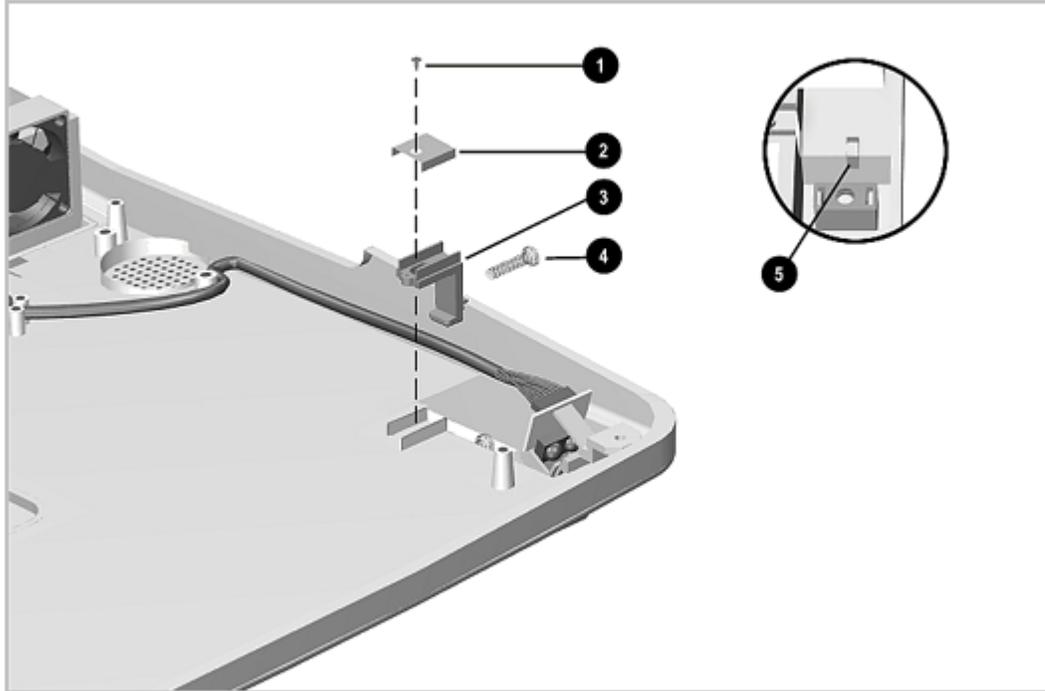
Figure 7-32. Removing the CPU Guide

4. Remove the CPU guide while guiding the spring out of its seat in the
   side panel of the expansion base (Figure 7-32).

Reverse the above procedure to install the CPU guide. Install the spring
in its seat first and make certain it is seated completely. Do not over
tighten the screw; the guide must be free to slide under the screw head.

Chapter 7.17 Monitor Support Cover Cap

The bottom cover must be removed before removing the monitor support cover
cap. The monitor support cover cap and spring snap into place. To remove
the cap and spring, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 7.3.

2. Remove the bottom cover assembly as described in Section 7.5.

3. Squeeze the tabs and allow the cap to drop out (Figure 7-33).
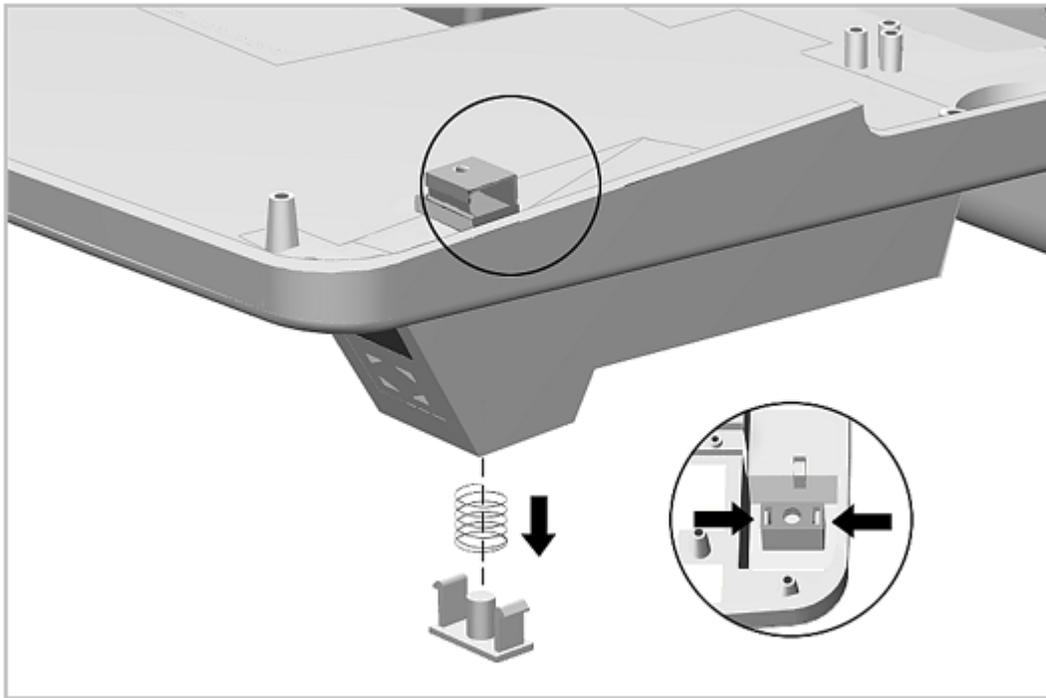
Figure 7-33. Removing the Monitor Support Cover Cap

Reverse the above procedure to install the monitor support cover cap.

Chapter 7.18 Docking Mechanism

The bottom cover assembly must be removed before removing the docking mechanism. The docking mechanism consists of the:

o Docking lever

o Docking lever cover

o Docking lever shield

o Slide block

o Docking bar

o Docking bar bushing

o Puller plate assembly

o Spring

To remove the docking mechanism, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 7.3.

2. Remove the bottom cover assembly as described in Section 7.5.

3. Remove the main board as described in Section 7.8.

4. Remove the screw and washer [1] that connects the docking bar [2] to the puller plate assembly [3] (Figure 7-34)
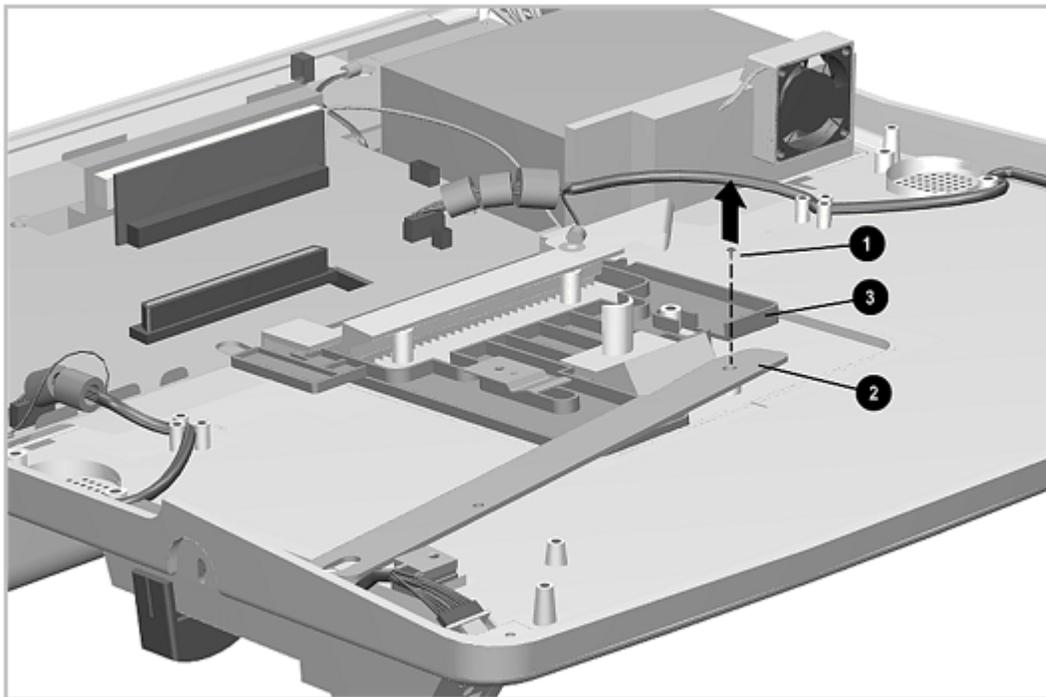
Figure 7-34. Disconnecting the Docking Bar from the Puller Plate

5. Lift the docking bar [1] and its bushing [2] out of the assembly (Figure 7-35).
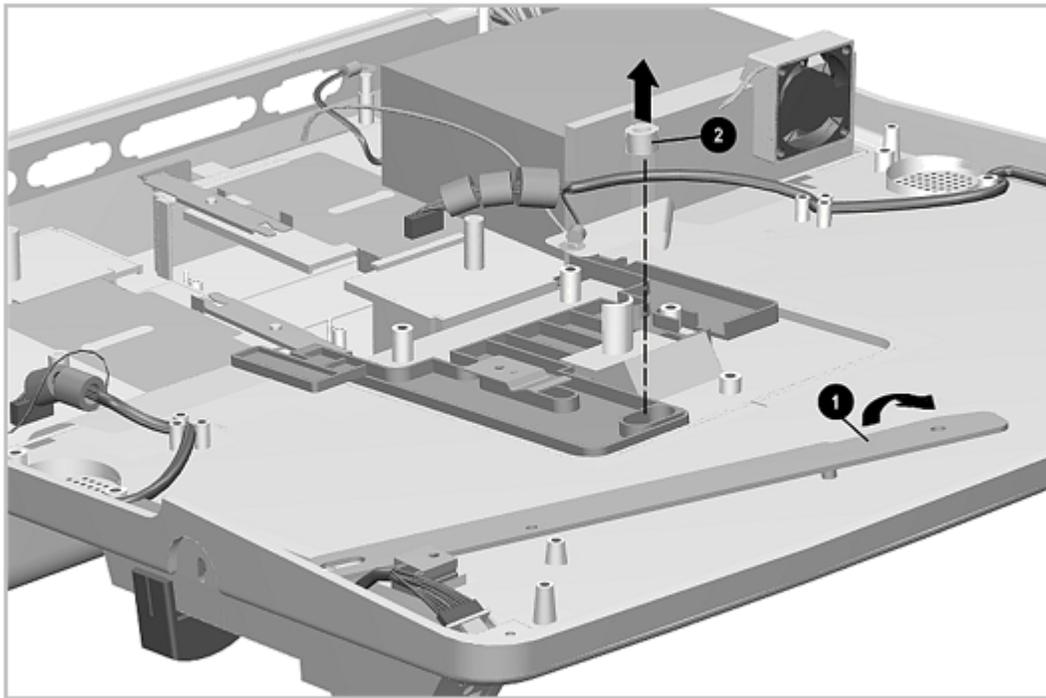
Figure 7-35. Removing the Docking Bar and Bushing

6. Remove the screw from the spring and lift the spring out (Figure 7-36).
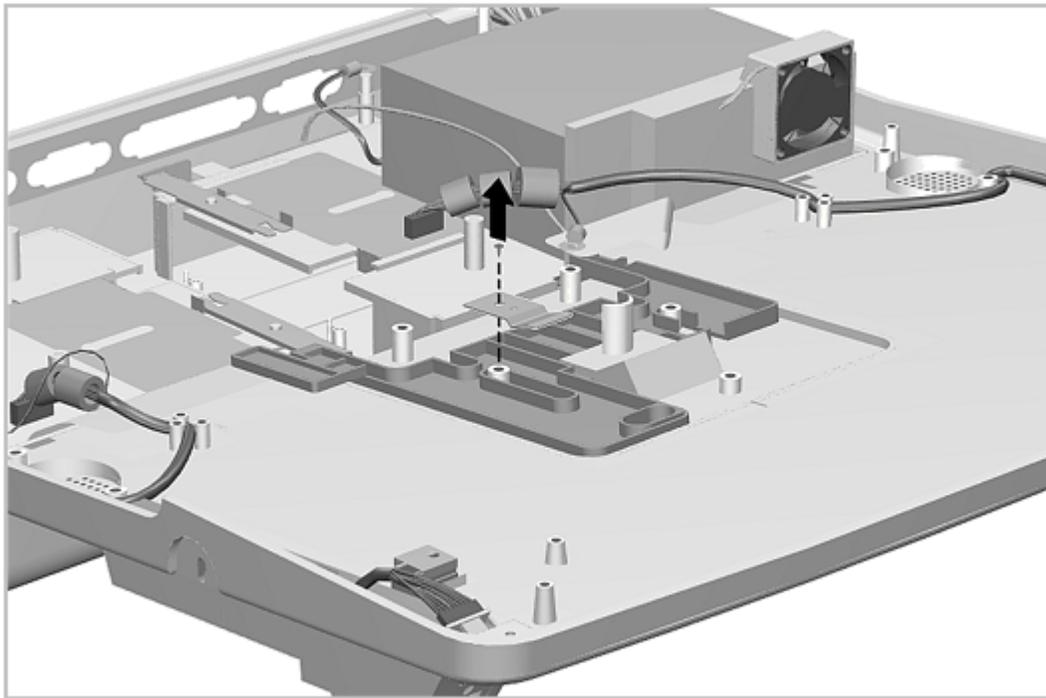
Figure 7-36. Removing the Puller Plate Spring

7. To remove the puller plate assembly [1], see Figure 7-37 and complete
   the following steps:

   a. Slide the puller plate all the way back [2].
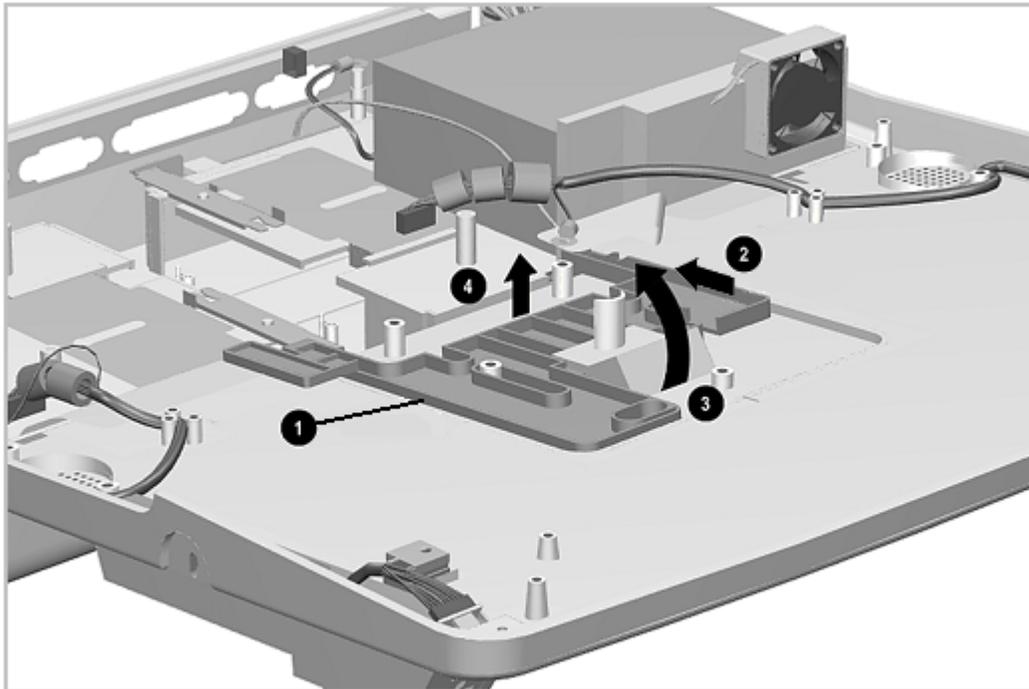
Figure 7-37. Removing the Puller Plate Assembly

   b. Lift the rear of the puller plate [4] and continue to slide back
      while pulling the catch [3] out of the opening in the base.

To install the puller plate assembly, press the docking aid [3] through
the opening and slide the puller plate [1] into place (Figure 7-37).

Reverse the previous procedure to install the docking mechanism. Be sure
to use nylock screws for the docking bar and spring.

Chapter 7.19 Docking Lever and Cover

To remove the docking lever and cover, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 7.3.

2. Remove the bottom cover assembly as described in Section 7.5.

3. Remove the screw and washer that connects the docking bar to the slide
   block and docking lever (Figure 7-38).
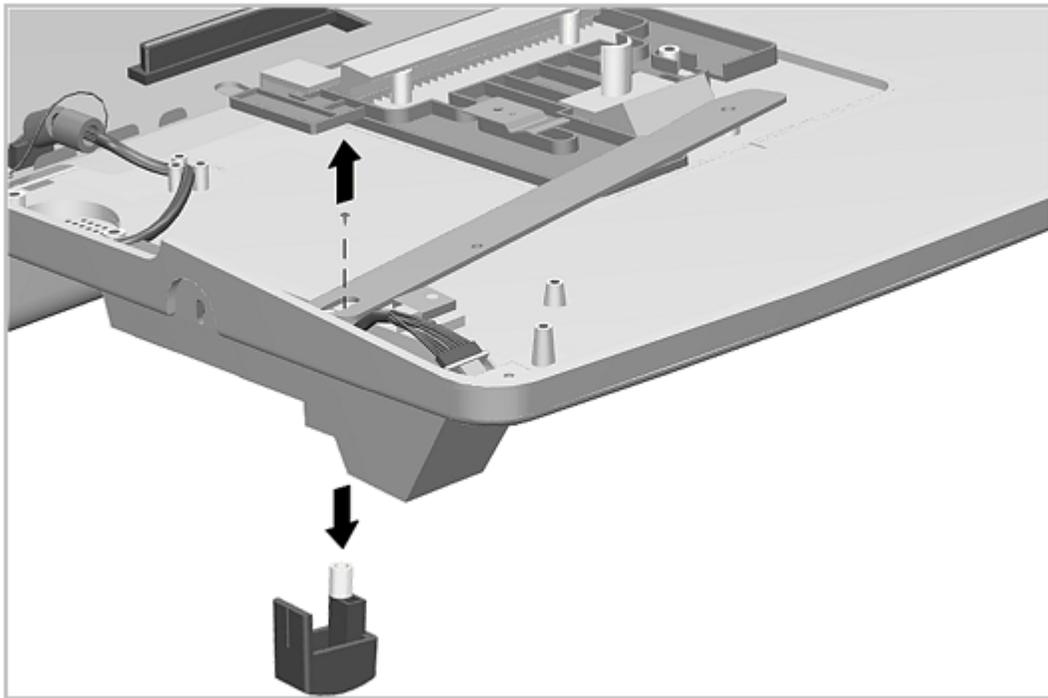
Figure 7-38. Removing the Docking Lever

4. The docking lever slider is now free to be removed [1]
   (Figure 7-39). Note that the little tab on one side of the docking
   lever slider [2] goes toward the outside of the expansion base at
   reassembly.
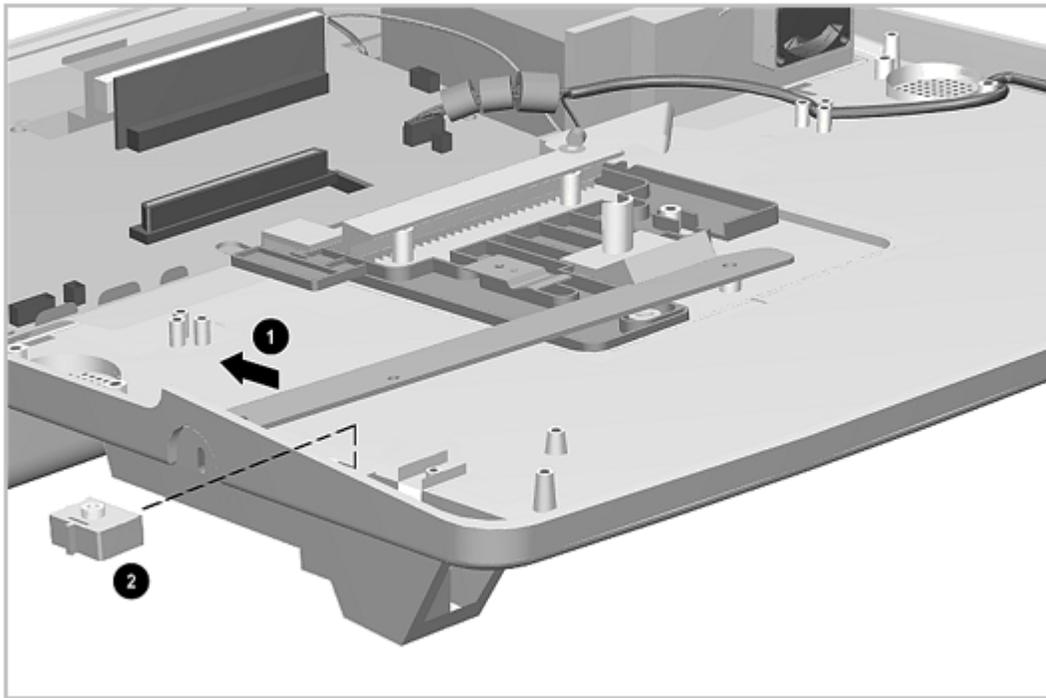
Figure 7-39. Removing the Docking Lever Slider

5. Remove the screws [1] and lift out the docking lever cover [2]
   (Figure 7-40).
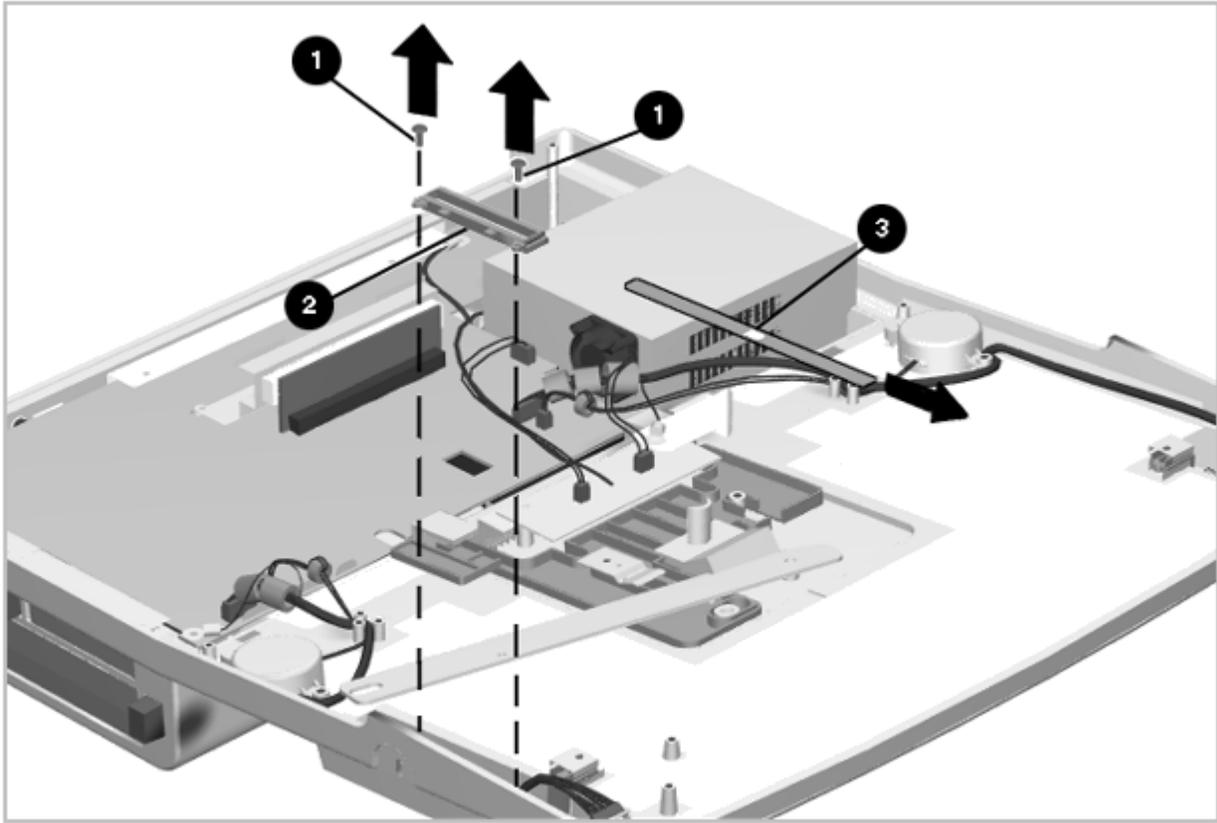
Figure 7-40. Removing the Docking Lever Cover

6. Remove the docking lever cover insert [3] as shown in Figure 7-40.

Reverse the above procedures to install the docking lever, docking lever slider, or docking lever cover.

Chapter 7.20 Security Lock Bracket

The security lock bracket simply slides into its mounting seat on the side of the expansion base. To remove and install the security lock bracket, complete the following steps:

1. Prepare the expansion base for disassembly as described in Section 7.3.

2. Remove the bottom cover assembly as described in Section 7.5.

3. Use a flat-blade screwdriver to pry the bracket straight up, or use a small pair of pliers to grasp the bracket and pull it out (Figure 7-41).
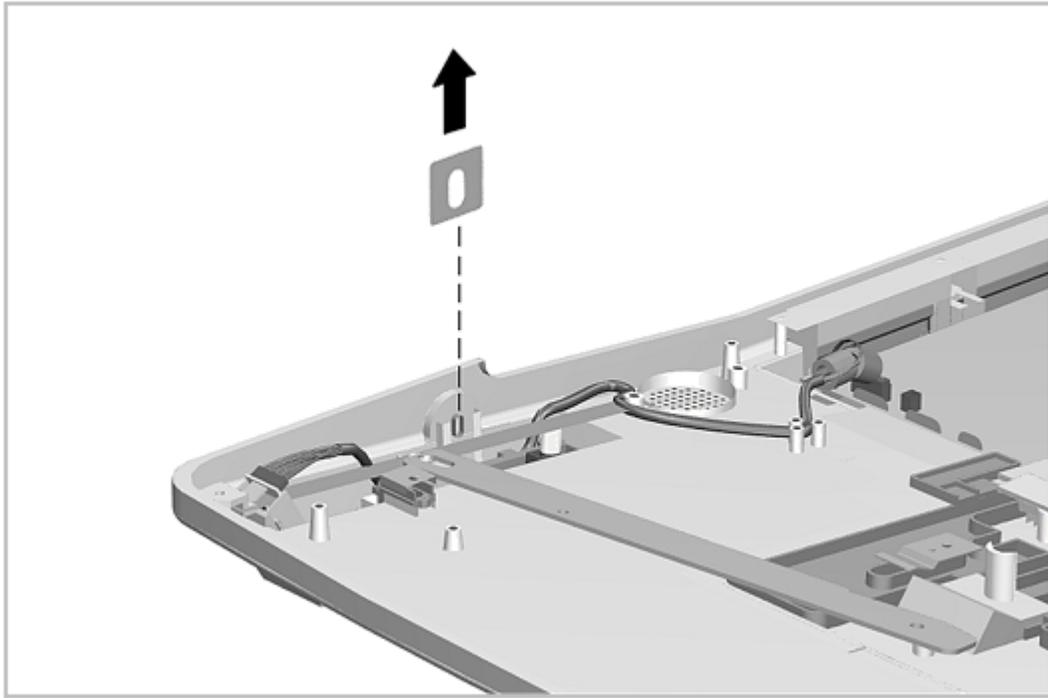
Figure 7-41. Removing the Security Lock Bracket

Chapter 8. Specifications

Chapter 8.0 Introduction

This chapter provides physical and performance specifications for the:

o Computer

o Display

o Hard drives

o Diskette drive

o CD-ROM drive

o Battery packs

o MultiBay Expansion Base

o MultiBay ISA Expansion Base

This chapter also includes:

o System interrupts

o System DMA

o System I/O address

o System memory map

Chapter 8.1 Computer Specifications

```
Table 8-1. Computer Specifications
=============================================================================
                                      U.S.                Metric
=============================================================================
Dimensions:
  Height                              2.13 in             5.42 cm
  Depth                               9.06 in             23.00 cm
  Width                               12.20 in            31.00 cm
-----------------------------------------------------------------------------
Weight:
  510 CSTN                            7.1 lb              3.23 kg
  810 CTFT                            7.3 lb              3.32 kg
  810 CSTN 800 x 600                  7.5 lb              3.39 kg
  810 CTFT 800 x 600                  7.4 lb              3.35 kg
  1350 CTFT 800 x 600                 7.4 lb              3.35 kg
  2160 CTFT 1024 x 768                7.4 lb              3.35 kg
-----------------------------------------------------------------------------
Standalone (Battery) Power Requirements:
  Nominal Operating Voltage           12 VDC
```

```
  Maximum Operating Power                    15 W
  Peak Operating Power                       25 W
------------------------------------------------------------------------
AC Adapter Power Requirements:
  Rated Voltage                              100-200 VAC RMS
  Operating Voltage                          90-240 VAC RMS
  Operating Current                          0.4 - 0.8 A RMS
  Operating Frequency Range                  47 to 63 Hz AC
  Maximum Transient                          1kV for 50 ns
------------------------------------------------------------------------
Automobile Adapter DC Input Requirements:
  Operating Voltage                          10 to 24 VDC
  Operating Power                            30 - 40 W
------------------------------------------------------------------------
Temperature:
  Operating                                  50 to 95oF          10 to 35oC
  Nonoperating                               -4 to 140oF         -20 to 60oC
------------------------------------------------------------------------
Relative Humidity (noncondensing):
  Operating                                  10 to 90%           10 to 90%
  Nonoperating (tw = 38.7 C max)             5 to 95%            5 to 95%
------------------------------------------------------------------------
Altitude:
  Operating                                  0 to 10,000 ft      0 to 3.15 km
  Nonoperating                               0 to 30,000 ft      0 to 9.14 km
------------------------------------------------------------------------
Shock:
  Operating                                  10 G, 11 ms, half sine
  Non operating                              240 G, 2 ms, half sine
------------------------------------------------------------------------
Vibration:
  Operating                                  0.5 G
  Nonoperating                               1.5 G
------------------------------------------------------------------------
NOTE: Applicable product safety standards specify thermal limits for
      plastic surfaces. The LTE 5000 operates well within this range of
      temperatures.
========================================================================
```

Chapter 8.2 Display Specifications

```
Table 8-2. 10.4 inch Color TFT SVGA Display
========================================================================
                         U.S.                      Metric
========================================================================
Dimensions:
  Height                 6.24 in                    15.84 cm
  Width                  8.32 in                    21.13 cm
------------------------------------------------------------------------
Number of Colors         256, 32K, 64K
------------------------------------------------------------------------
Contrast Ratio           100:1
------------------------------------------------------------------------
Brightness               70 CD/M-2 @ 4.3 mA
------------------------------------------------------------------------
Pixel Resolution
  Pitch                  0.264 x 0.264 mm
  Format                 800 x 600
```

```
  Configuration               RGB Stripe
-----------------------------------------------------------------------------
Backlight                     Edge Lit
-----------------------------------------------------------------------------
Character Display             80 x 25
-----------------------------------------------------------------------------
Total Power Consumption       4.0 W
=============================================================================

Table 8-3. 10.4 inch Color TFT VGA Display
=============================================================================
                              U.S.                    Metric
=============================================================================
Dimensions:
  Height                      6.24 in                 15.84 cm
  Width                       8.32 in                 21.12 cm
-----------------------------------------------------------------------------
Number of Colors              256, 32K, 64K, 16M
-----------------------------------------------------------------------------
Contrast Ratio                100:1
-----------------------------------------------------------------------------
Brightness                    70 CD/M-2 @ 4.3 mA
-----------------------------------------------------------------------------
Pixel Resolution:
  Pitch                       0.33 x 0.33 mm
  Format                      640 x 480
  Configuration               RGB Stripe
-----------------------------------------------------------------------------
Backlight                     Edge Lit
-----------------------------------------------------------------------------
Character Display             80 x 25
-----------------------------------------------------------------------------
Total Power Consumption       3.8 W
=============================================================================

Table 8-4. 11.3 inch Color TFT SVGA Display
=============================================================================
                              U.S.                    Metric
=============================================================================
Dimensions:
  Height                      6.88 in                 9.15 in
  Width                       17.48 cm                23.24 cm
-----------------------------------------------------------------------------
Number of Colors              64K
-----------------------------------------------------------------------------
Contrast Ratio                100:1
-----------------------------------------------------------------------------
Brightness                    70 CD/M-2 @ 4.0 mA
-----------------------------------------------------------------------------
Pixel Resolution:
  Pitch                       0.288 x 0.288 mm
  Format                      800 x 600
  Configuration               RGB Stripe
-----------------------------------------------------------------------------
Backlight                     Edge Lit
-----------------------------------------------------------------------------
Character Display             80 x 25
-----------------------------------------------------------------------------
Total Power Consumption       3.7 W
=============================================================================
```

```
Table 8-5. 12.1 inch Color TFT SVGA Display
==========================================================================
                              U.S.                    Metric
==========================================================================
Dimensions:
  Height                      7.26 in                 18.45 cm
  Width                       9.68 in                 24.6 cm
--------------------------------------------------------------------------
Number of Colors              64K
--------------------------------------------------------------------------
Contrast Ratio                100:1
--------------------------------------------------------------------------
Brightness                    70 CD/M-2 @ 4.0mA
--------------------------------------------------------------------------
Pixel Resolution:
  Pitch                       0.3075 x 0.3075 mm
  Format                      800 x 600
  Configuration               RGB Stripe
--------------------------------------------------------------------------
Backlight                     Edgelit
--------------------------------------------------------------------------
Character Display             80 x 25
--------------------------------------------------------------------------
Total Power Consumption       3.9 W
==========================================================================

Table 8-6. 12.1 inch Color TFT 1024x768 Display
==========================================================================
                              U.S.                    Metric
==========================================================================
Dimensions (Active area):
  Height                      7.26 in                 18.43 cm
  Width                       9.68 in                 24.58 cm
--------------------------------------------------------------------------
Number of Colors              Panel: 256K
                              System: 256
--------------------------------------------------------------------------
Contrast Ratio                100:1
--------------------------------------------------------------------------
Brightness                    70 CD/M-2 @ 5.0mA
--------------------------------------------------------------------------
Pixel Resolution:
  Pitch                       0.24 x 0.24 mm
  Format                      1024 x 768
  Configuration               RGB Stripe
--------------------------------------------------------------------------
Backlight                     Single CCFL/Sidelit
--------------------------------------------------------------------------
Character Display             80 x 25
--------------------------------------------------------------------------
Total Power Consumption       4.5 W
==========================================================================

Table 8-7. 11.3 inch Color DSTN SVGA Display
==========================================================================
                              U.S.                    Metric
==========================================================================
Dimensions:
  Height                      6.80 in                 9.07 in
```

```
  Width                        17.28 cm                 23.04 cm
--------------------------------------------------------------------------
Number of Colors             256
--------------------------------------------------------------------------
Contrast Ratio               25:1
--------------------------------------------------------------------------
Brightness                   70 CD/M-2 @ 6.0 mA
--------------------------------------------------------------------------
Pixel Resolution:
  Pitch                      0.288 x 0.288 mm
  Format                     800 x 600
  Configuration              RGB Stripe
--------------------------------------------------------------------------
Backlight                    Edge Lit
--------------------------------------------------------------------------
Character Display            80 x 25
--------------------------------------------------------------------------
Total Power Consumption      3.8 W
==========================================================================

Table 8-8. 10.4 inch Color DSTN VGA Display
==========================================================================
                             U.S.                     Metric
==========================================================================
Dimensions:
  Height                     6.24 in                  15.84 cm
  Width                      8.32 in                  21.13 cm
--------------------------------------------------------------------------
Number of Colors             256, 32K, 64K
--------------------------------------------------------------------------
Contrast Ratio               20:1
--------------------------------------------------------------------------
Brightness                   70 CD/M-2 @ 4.0mA
--------------------------------------------------------------------------
Pixel Resolution:
  Pitch                      0.288 x 0.288 mm
  Format                     640 x 480
  Configuration              RGB Stripe
--------------------------------------------------------------------------
Backlight                    Edgelit
--------------------------------------------------------------------------
Character Display            80 x 25
--------------------------------------------------------------------------
Total Power Consumption      3.8 W
==========================================================================
```

Chapter 8.3 Hard Drive Specifications

```
Table 8-9. Hard Drive Specifications
==========================================================================
                        510 MB   810 MB      1.35 GB         2.16 GB
==========================================================================
Capacity per Drive      524 MB   808.2 MB    1.35 GB         2.16 GB
--------------------------------------------------------------------------
Drive Type              65       65          65              N/A
--------------------------------------------------------------------------
2.5 inch Form Factor    Yes      Yes         Yes             Yes
--------------------------------------------------------------------------
```

```
Sector Interleave            1:1      1:1         1:1           1:1
-------------------------------------------------------------------------------
Integrated Controller        Yes      Yes         Yes           Yes
-------------------------------------------------------------------------------
Physical Configuration:
  Cylinders                  1920     2360        2920          3650
  Heads                      8        8           8             10
  Bytes per sector           512      512         512           512
-------------------------------------------------------------------------------
Logical Configuration:
  Cylinders                  1016     1571        2633          4200
  Heads                      16       16          16            16
  Sectors per Track          63       63          63            63
  Bytes per Sector           512      512         512           512
-------------------------------------------------------------------------------
Buffers Size                 128K     128K        128K          128K
-------------------------------------------------------------------------------
Seek Times (Typical,
Including settling in ms):
  Single Track               6        4           3             3
  Average                    16       15          13            13
  Full Stroke                26       24          25            25
-------------------------------------------------------------------------------
Transfer Rates:
  Host/Interface             5.22     8.33        11.1          11.1
  (MB/sec)
  Media (Mbits/sec)          27.28    24.9 - 36   24.7 to 44.9  38.1 to 54.8
===============================================================================
```

Chapter 8.4 Diskette Drive Specifications

```
Table 8-10. Diskette Drive Specifications
===============================================================================
Diskette size:                   3.5 inch
  High density                   1.44 MB/1.2 MB
  Low density                    720 KB
-------------------------------------------------------------------------------
Light                            None
-------------------------------------------------------------------------------
Height                           0.59-in (15 mm)
-------------------------------------------------------------------------------
Bytes per sector                 512
-------------------------------------------------------------------------------
Sectors per Track:
  High density                   18 (1.44 MB)/15 (1.2 MB)
  Low density                    9
-------------------------------------------------------------------------------
Tracks per Side
  High density                   80 (1.44 MB)/80 (1.2 MB)
  Low density                    80
-------------------------------------------------------------------------------
Read/Write heads                 2
-------------------------------------------------------------------------------
Average Seek Times:
  Track-to-Track (high/low)      3 ms
  Average (high/low)             95 ms
  Settling Time                  15 ms
  Latency Average                100 ms
```

```
===============================================================================
```

Chapter 8.5 CD-ROM Drive Specifications

```
Table 8-11. Dual-Speed CD-ROM Drive Specifications
===============================================================================
Applicable Disc                 CD-ROM mode 1, mode 2
                                 CD-Digital Audio
                                 CD-XA mode 2 (Form 1, Form 2)
                                 Photo CD (signal/multisession)
-------------------------------------------------------------------------------
Center Hole Diameter            15 mm
-------------------------------------------------------------------------------
Disc Diameter                   12 cm, 8 cm
-------------------------------------------------------------------------------
Rotational Speed                1060 - 400 rpm, double speed
-------------------------------------------------------------------------------
Disc Thickness                  1.2 mm
-------------------------------------------------------------------------------
Track Pitch                     1.8 um
-------------------------------------------------------------------------------
Laser:
  Beam Divergence               10 (vertical)/36 (horizontal) degrees
  Output Power                  0.7 to 2.5 mw
  Type                          Ellipse
  Wave Length                   780 nm +15/- 10
-------------------------------------------------------------------------------
Access time:
  Random                        350 ms
  Full Stroke                   700 ms
-------------------------------------------------------------------------------
Audio output level:
  Line Out                      0.85 mV rms
  Headphone                     None
-------------------------------------------------------------------------------
Cache buffer                    64 KB
-------------------------------------------------------------------------------
Data transfer rate:
  Sustained                     300 KB/sec
  Asynchronous                  13.5 MB/sec
  Startup Time                  6.5 seconds typical
===============================================================================

Table 8-12. Quad-Speed CD-ROM Drive Specifications
===============================================================================
Applicable Disc                 CD-ROM mode 1, mode 2
                                 CD-Digital Audio
                                 CD-XA mode 2 (Form 1, Form 2)
                                 Photo CD (signal/multisession)
-------------------------------------------------------------------------------
Center Hole Diameter            15 mm
-------------------------------------------------------------------------------
Disc Diameter                   12 cm, 8 cm
-------------------------------------------------------------------------------
Rotational Speed                2120 - 800 rpm, quad-speed
-------------------------------------------------------------------------------
Disc Thickness                  1.2 mm
-------------------------------------------------------------------------------
```

```
Track Pitch                     1.8 um
-------------------------------------------------------------------------------
Laser:
  Beam Divergence               10 (vertical)/36 (horizontal) degrees
  Output Power                  0.7 to 2.5 mw
  Type                          Ellipse
  Wave Length                   780 nm +15/- 10
-------------------------------------------------------------------------------
Access time:
  Random                        250 ms
  Full Stroke                   500 ms
-------------------------------------------------------------------------------
Audio output level:
  Line Out                      0.85 mV rms
  Headphone                     None
-------------------------------------------------------------------------------
Cache buffer                    128 KB
-------------------------------------------------------------------------------
Data transfer rate:
  Sustained                     600 KB/sec
  Asynchronous                  14.3 MB/sec
  Startup Time                  7 seconds typical
===============================================================================

Table 8-13. 6X CD-ROM Drive Specifications
===============================================================================
Applicable Disc                 CD-ROM mode 1, mode 2
                                CD-Digital Audio
                                CD-XA mode 2 (Form 1, Form 2)
                                Photo CD (signal/multisession)
-------------------------------------------------------------------------------
Center Hole Diameter            15 mm
-------------------------------------------------------------------------------
Disc Diameter                   12 cm, 8 cm
-------------------------------------------------------------------------------
Rotational Speed                1200 - 3180 rpm
-------------------------------------------------------------------------------
Disc Thickness                  1.2 mm
-------------------------------------------------------------------------------
Track Pitch                     1.8 um
-------------------------------------------------------------------------------
Laser:
  Beam Divergence               11 (vertical)/37 (horizontal) degrees
  Output Power                  5 mw
  Type                          AlGaAs double-hetero visible laser diode
  Wave Length                   785 nm
-------------------------------------------------------------------------------
Access time:
  Random                        190 ms (6X speed)
  Full Stroke                   450 ms (6X speed)
-------------------------------------------------------------------------------
Audio output level:
  Line Out                      0.85 mV rms
  Headphone                     None
-------------------------------------------------------------------------------
Cache buffer                    128 KB
-------------------------------------------------------------------------------
Data transfer rate:
  Sustained                     900 KB/sec
  Asynchronous                  16.7 MB/sec
```

```
      Startup Time                   8 seconds typical
=============================================================================
```

Chapter 8.6 Battery Specifications

```
Table 8-14. Nickel Metal Hydride Battery Pack
=============================================================================
                                U.S.                     Metric
=============================================================================
Dimensions:
 Height                         0.75 in                  1.9 cm
 Length                         5.55 in                  14.1 cm
 Width                          3.94 in                  10.0 cm
-----------------------------------------------------------------------------
Weight                          1.30 lb                  0.59 kg
-----------------------------------------------------------------------------
Energy:
  Voltage                       12 V
-----------------------------------------------------------------------------
Environmental Requirements:
  Operating temperatures        50oF to 104oF            10oC to 40oC

  Storage temperatures
    No time limit               -4oF to 86oF             -20oC to 30oC
    No longer than 3 months     -4oF to 104oF            -20oC to 40oC
    No longer than 1 year       -4oF to 122oF            -20oC to 50oC
=============================================================================
```

Chapter 8.7 MultiBay Expansion Base Physical and Environmental Specifications

```
Table 8-15. MultiBay Expansion Base Physical and Environmental
=============================================================================
                                U.S.                     Metric
=============================================================================
Dimensions:
  Height                        3.18 in                  8.07 cm
  Depth                         16.44 in                 41.75 cm
  Width                         14.61 in                 37.11 cm
  Height (to top of             4.16 in                  10.57 cm
  monitor support cover)
-----------------------------------------------------------------------------
Weight
  Expansion Base                6.68 lb                  3.03 kg
  Monitor Stand                 2.32 lb                  1.05 kg
-----------------------------------------------------------------------------
Power Supply (Input)
  Operating Voltage             90 to 260 VAC
  Operating Current             1.0 Amp Maximum
  Rated Voltage                 100 to 240 VAC
  Rated Current                 1.0 Amp Maximum
  Line Frequency                47 to 63 Hz.
-----------------------------------------------------------------------------
Temperature
  Operating                     50 to 95oF               10 to 35oC
  Nonoperating                  -22 to 140oF             -30 to 60oC
-----------------------------------------------------------------------------
```

```
Relative Humidity
  Operating                20 to 80%
  Nonoperating             5 to 90%
--------------------------------------------------------------------------
Altitude
  Operating                10,000 ft                 3048 m
  Nonoperating             30,000 ft                 9144 m
--------------------------------------------------------------------------
Shock
  Operating                5 G, 11 ms, half sine
  Nonoperating             140 G, 2 ms, half sine
--------------------------------------------------------------------------
Vibration
  Operating                .25 G, 10 to 500 Hz sine   .25 octave/min sweep
  Nonoperating             .75 G, 10 to 500 Hz sine   .5 octave/min sweep
--------------------------------------------------------------------------
Heat Dissipation          Btu/hr                    kg-cal/min
--------------------------------------------------------------------------
Monitor Support (maximum) 55 lb                     25 kg
==========================================================================
```

The MultiBay Expansion Base is designed in accordance with ANSI
specifications (number X3.131-1993, Revision 10h) and IEEE 802.3
specifications.

Chapter 8.8 MultiBay ISA Expansion Base Physical and Environmental Specifications

```
Table 8-16. MultiBay ISA Expansion Base Physical and Environmental
==========================================================================
                          U.S.                      Metric
==========================================================================
Dimensions:
  Height
    with monitor           5.50 in                   14.0 cm
    support cover

    without monitor        4.51 in                   11.5 cm
    support cover

  Depth                    16.44 in                  41.75 cm
  Width                    14.61 in                  37.11 cm
--------------------------------------------------------------------------
Weight:
  Expansion Base           9.72 lb                   4.41 kg
  Monitor Stand            2.32 lb                   1.05 kg
--------------------------------------------------------------------------
Power Supply (Input):
  Operating Voltage        90 to 260 VAC
  Operating Current        1.0 Amp Maximum
  Rated Voltage            100 to 240 VAC
  Rated Current            1.0 Amp Maximum
  Line Frequency           47 to 63 Hz.
--------------------------------------------------------------------------
Temperature:
  Operating                50 to 95oF                10 to 35oC
  Nonoperating             -22 to 140oF              -30 to 60oC
--------------------------------------------------------------------------
```

```
Relative Humidity:
  Operating                20 to 80%
  Nonoperating             5 to 90%
-----------------------------------------------------------------------------
Altitude:
  Operating                10,000 ft                      3048 m
  Nonoperating             30,000 ft                      9144 m
-----------------------------------------------------------------------------
Shock:
  Operating                5 G, 11 ms, half sine
  Nonoperating             140 G, 2 ms, half sine
-----------------------------------------------------------------------------
Vibration:
  Operating                .25 G, 10 to 500 Hz sine    .25 octave/min sweep
  Nonoperating             .75 G, 10 to 500 Hz sine    .5 octave/min sweep
-----------------------------------------------------------------------------
Heat Dissipation           Btu/hr                         kg-cal/min
-----------------------------------------------------------------------------
Monitor Support            55 lb                          25 kg
(maximum)
=============================================================================
```

The MultiBay ISA Expansion Base is designed in accordance with ANSI
specifications (number X3.131-1993, Revision 10h) and IEEE 802.3
specifications.

Chapter 8.9 System Interrupts

```
Table 8-17. System Interrupts
=============================================================================
Hardware IRQ    System Function
=============================================================================
IRQ0            Timer Interrupt

IRQ1            Keyboard

IRQ2            Interrupt Controller Cascade

IRQ3            Unused

IRQ4            Infrared Serial Port (COM 3) (default)

IRQ4            RS232 Serial Port (COM 1) (default)

IRQ5            Audio (default) *

IRQ6            Diskette Drive

IRQ7            Parallel Port (LPT 1) (default)

IRQ8            Real-Time Clock (Not on ISA Bus)

IRQ9            Unused (Except by optional MPEG)

IRQ10           Unused (Network Interface in MEB default) **

IRQ11           Unused, available for PC Card
```

```
IRQ12           Internal Point Stick or External Mouse

IRQ13           Coprocessor (Not available to any peripheral)

IRQ14           IDE Interface (Hard Disk and CD-ROM Drive)

IRQ15           Fixed Disk Drives on the MultiBay Expansion Base
-------------------------------------------------------------------
NOTES: PCMCIA cards may assert IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11,
       or IRQ15.  Either the infrared or the serial port may assert IRQ3
       or IRQ4.

         * Default configuration; audio possible configurations are: IRQ5,
           IRQ7, IRQ9, IRQ10, or none.

        ** Default configuration; possible configurations for the expansion
           base network interface adapter are IRQ9, IRQ10, IRQ11, or none.
===================================================================================
```

Chapter 8.10 System DMA

```
Table 8-18. System DMA
===================================================================================
Hardware DMA    System Function
===================================================================================
DMA 0           Available for Audio

DMA 1           Entertainment Audio (Default; Alternate = DMA0, DMA3, None)

DMA 2           Diskette Drive

DMA 3           ECP Parallel Port LPT1 (Default; Alternate = DMA 0, none)

DMA 4           DMA Controller Cascading (Not available)

DMA 5           Available for PC Card

DMA 6           Not Assigned

DMA 7           Not Assigned
-------------------------------------------------------------------
NOTE: PC Card controller can use DMA 1, 2, or 5.
===================================================================================
```

Chapter 8.11 System I/O Address

```
Table 8-19. System I/O Address
===================================================================================
I/O Address (Hex)       System Function (Shipping Configuration)
===================================================================================
000 - 00F               DMA Controller # 1

010 - 01F               Unused

020 - 021               Interrupt Controller # 1
```

```
022 - 024              Opti Chipset Configuration registers

025 - 03F              Unused

02E - 02F              87334 "Super IO" configuration for CPU

040 - 043              Counter/Timer Registers

044 - 05F              Unused

060                    Keyboard Controller

061                    Port B

062 - 063              Unused

064                    Keyboard Controller

065 - 06F              Unused

070 - 071              NMI Enable/Real Time Clock

072 - 07F              Unused

080 - 08F              DMA Page Registers

090 - 091              Unused

092                    Port A

093 - 09F              Unused

0A0 - 0A1              Interrupt Controller # 2

0A2 - 0BF              Unused

0C0 - 0DF              DMA Controller # 2

0E0 - 0EF              Unused

0F0 - 0F1              Coprocessor Busy Clear/Reset

0F2 - 0FF              Unused
==============================================================================
I/O Address (Hex)      System Function (Shipping Configuration)
==============================================================================
100 - 16F              Unused

170 - 177              Secondary Fixed Disk Controller

178 - 1EF              Unused

1F0 - 1F7              Primary Fixed Disk Controller

1F8 - 200              Unused

201- 202               Joystick (Decoded in ESS1688)

203 - 21F              Unused
```

220 - 22F	Entertainment Audio (Default alternate is 230, 240, 250
230 - 26D	Unused
26E - 26FH	National 87334 "Super IO" Controller in MEB
278 - 27F	Unused
280 - 2AB	Unused
2A0	MEB PC Card DMA Selection, Hard Drive Reset, IDE Select, MultiBay Device Identification
2A1 - 2E7	Unused
2E8 - 2EF	Reserved Serial Port (COM4)
2F0 - 2F7	Unused
2F8 - 2FF	Reserved for Serial Port (COM2)
300 - 31F	Network Interface in MEB (Default; Alternate is 320, 340, or 360h)
320 - 321	MPU-401 Interface (Default; Alternate is 300, 310, 330
322- 36F	Unused
370 - 375	Secondary Floppy Controller (In MEB when a floppy is installed in the CPU)
376	Secondary Fixed Disk Controller
377	Secondary Floppy Controller (In MEB when a floppy is installed in the CPU)
378 - 37F	Parallel Port w/EPP support (LPT1/Default)
380 - 387	Unused
388 - 38B	FM Synthesizer - OPL3
38C - 3AF	Unused
3B0 - 3BB	VGA
3BC - 3BF	Reserved (Parallel Port/No EPP Support)
3C0 - 3DF	VGA
3E0 - 3E1	PC Card controller in CPU
3E2 - 3E3	PC Card controller in MEB
3E8 - 3EF	Infrared Serial Port (COM3/Default)
3F0 - 3F5	"A" Diskette Controller

```
3F6                        Primary Fixed Disk Controller

3F7                        "A" Diskette Controller

3F8 - 3FF                  Serial Port (COM1/Default)

CF8 - CFB                  PCI Configuration Index Register (PCIDIV0-1)

CFC - CFF                  PCI Configuration Data Register (PCIDIV0-1)
===============================================================================
```

Chapter 8.12 System Memory Map

```
Table 8-20. System Memory Map
===============================================================================
Size      Memory Address          System Function
===============================================================================
640 K     00000000 - 0009FFFF     Base Memory

128 K     000A0000 - 000BFFFF     Video Memory

48 K      000C0000 - 000CBFFF     Video BIOS

112K      000CC000 - 000E7FFF     Unused

16 K      000E8000 - 000EBFFF     PCI System BIOS - Unused after POST

12 K      000EC000 - 000EEFFF     PnP System BIOS

4K        000EF000 - 000EFFFF     EPP System BIOS

64K       000F0000 - 000FFFFF     System BIOS

15 M      00100000 - 00FFFFFF     Extended Memory

64 M      01000000 - 04FFFFFF     Super Extended Memory

48 M      05000000 - 07FFFFFF     Unused

2 M       08000000 - 080FFFFF     Video Memory (Direct Access)

4 G       08200000 - FFFEFFFF     Unused

64 K      FFFF0000 - FFFFFFFF     System BIOS ("SHADOW")
===============================================================================
```

Appendix A.1 Connector Pin Assignments

This appendix contains the pin assignments for all external connectors.
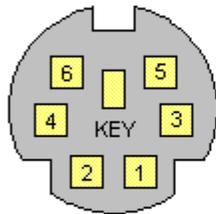
Pin	Signal
1	Data
2	Unused
3	Ground
4	+5 VDC
5	Clock
6	Unused

Location of Pin Assignments for the External Keyboard Connector

IPA-1A

```
Table A-1. External Keyboard
=============================================================================
Pin     Signal
=============================================================================
1       Data

2       Unused

3       Ground

4       +5 VDC

5       Clock

6       Unused
=============================================================================
```
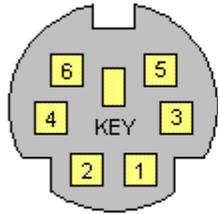
Pin	Signal
1	Data
2	Unused
3	Ground
4	+5 VDC
5	Clock
6	Unused

Location of Pin Assignments for the PS/2-Compatible Mouse

```
Table A-2. PS/2-Compatible Mouse
==========================================================================
Pin     Signal
==========================================================================
1       Data

2       Unused

3       Ground

4       +5 VDC

5       Clock

6       Unused
==========================================================================
```
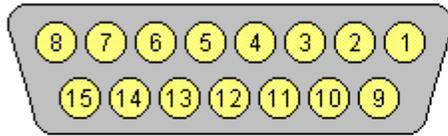
Pin	Signal
1	Ground
2	Joystick Button
3	Joystick Direction
4	Ground
5	Ground
6	Joystick Direction
7	Joystick Button
8	Ground
9	Ground
10	Joystick Button
11	Joystick Direction
12	MIDI Out
13	Joystick Direction
14	Joystick Button
15	MIDI In

Location of Pin Assignments for the MIDI/Game Connector

IPA-1c

```
Table A-3. MIDI/Game
==========================================================================
Pin     Signal
==========================================================================
 1      Ground

 2      Joystick Button

 3      Joystick Direction

 4      Ground

 5      Ground

 6      Joystick Direction

 7      Joystick Button

 8      Ground

 9      Ground

10      Joystick Button

11      Joystick Direction

12      MIDI Out
```

```
13      Joystick Direction

14      Joystick Button

15      MIDI In
=============================================================================
```


Location of Pin Assignments for the Ethernet RJ-45 Connector
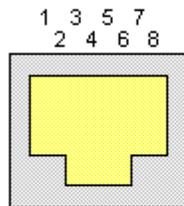
```
Table A-4. Ethernet RJ-45
=============================================================================
Pin     Signal
=============================================================================
1       (+) Transmit Data

2       (-) Transmit Data

3       (+) Receive Data

4       Unused

5       Unused

6       (-) Receive Data

7       Unused
```

```
8         Unused
==========================================================================
```
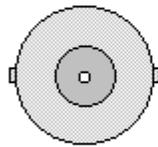

Pin	Signal
1 (Inside)	Data
2 (Outside)	Ground

Location of Pin Assignments for the BNC Connector

IPA-2b

```
Table A-5. BNC
==========================================================================
Pin             Signal
==========================================================================
1 (Inside)      Data

2 (Outside)     Ground
==========================================================================
```
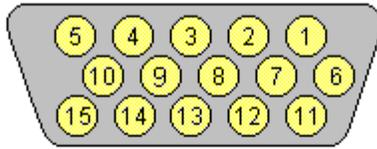
Pin	Signal	Pin	Signal
1	Red Analog	9	+5 Volt Supply
2	Green Analog	10	Ground
3	Blue Analog	11	Monitor ID Bit 0
4	Monitor ID Bit 2	12	Monitor ID Bit 1 (SDA)
5	Ground	13	Horizontal SyNC
6	Ground	14	Vertical SyNC
7	Ground	15	Monitor ID Bit 3 (SCL)
8	Ground		

Location of Pin Assignments for the External Monitor Connector

IPA-2c

```
Table A-6. External Monitor
==========================================================================
Pin     Signal
==========================================================================
 1      Red Analog

 2      Green Analog

 3      Blue Analog

 4      Monitor ID Bit 2

 5      Ground

 6      Ground

 7      Ground

 8      Ground

 9      +5 Volt Supply

10      Ground

11      Monitor ID Bit 0

12      Monitor ID Bit 1 (SDA)
```

```
   13      Horizontal SyNC

   14      Vertical SyNC

   15      Monitor ID Bit 3 (SCL)
========================================================================
```
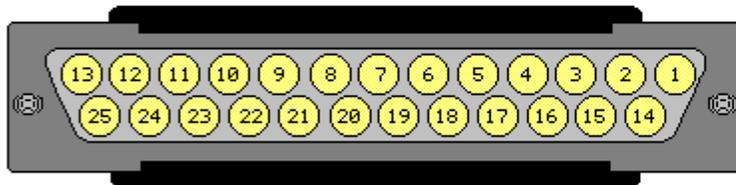
Pin	Signal
1	Strobe
2	Data Bit 0
3	Data Bit 1
4	Data Bit 2
5	Data Bit 3
6	Data Bit 4
7	Data Bit 5
8	Data Bit 6
9	Data Bit 7
10	Acknowledge
11	Busy
12	Paper End
13	Select
14	Auto Linefeed
15	Error
16	Initialize Printer
17	Select In
18-25	Signal Ground

Location of Pin Assignments for the Parallel Connector

IPA-3a

```
Table A-7. Parallel
==========================================================================
Pin     Signal
==========================================================================
  1     Strobe

  2     Data Bit 0

  3     Data Bit 1

  4     Data Bit 2

  5     Data Bit 3

  6     Data Bit 4

  7     Data Bit 5
```

```
 8       Data Bit 6

 9       Data Bit 7

10       Acknowledge

11       Busy

12       Paper End

14       Auto Linefeed

13       Select

15       Error

16       Initialize Printer

17       Select In

18       Ground

19       Ground

20       Ground

21       Ground

22       Ground

23       Ground

24       Ground

25       Ground
===========================================================================
```
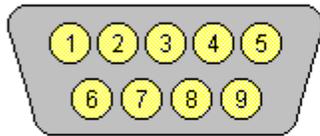
Pin	Signal
1	Carrier Detect
2	Receive Data
3	Transmit Data
4	Data Terminal Ready
5	Ground
6	Data Set Ready
7	Request to Send
8	Clear to Send
9	Ring Indicator

Location of Pin Assignments for the Serial Connector

IPA-3b

```
Table A-8. Serial
==========================================================================
Pin     Signal
==========================================================================
1       Carrier Detect

2       Receive Data

3       Transmit Data

4       Data Terminal Ready

5       Ground

6       Data Set Ready

7       Ready to Send

8       Clear to Send

9       Ring Indicator
==========================================================================
```

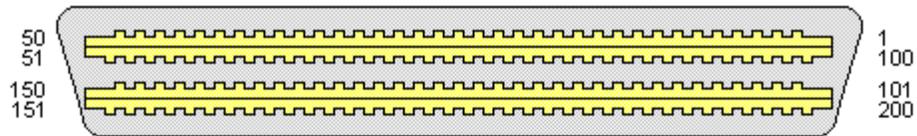| Pin	Signal	Pin	Signal
1	Expansion - SMI (Reserved)	26	System Data Bit 8
2	CRT - Red Video	27	System Data Bit 10
3	Battery 2 Voltage	28	Ground
4	CRT - Blue Video	29	System Data Bit 12
5	CRT - Green Video	30	System Data Bit 14
6	CRT - Vertical SyNC	31	System Data Bit 16
7	CRT - Horizontal SyNC	32	System Data Bit 20
8	CRT ID Bit 3 / Clock	33	Ground
9	Line In - Right Channel	34	16-Bit Memory Cycle*
10	Ground	35	Low Memory Read Control*
11	VAFC - Overlay Window	36	I/O Bus Ready*
12	VAFC - SyNC Enable	37	I/O Error Check*
13	IDE Active *	38	Ground
14	VAFC - Pixel Data 2	39	OSC
15	VAFC - Pixel Data 6	40	Ground
16	Ground	41	Interrupt Request 5
17	VAFC -Pixel Data 10	42	Interrupt Request 10
18	VAFC - Pixel Data 14	43	Interrupt Request 15
19	TV - Composite SyNC	44	DMA Request 3
20	Ground	45	DMA Acknowledge 0*
21	System Data Bit 0	46	DMA Acknowledge 5*
22	System Data Bit 2	47	DMA Acknowledge 7*
23	System Data Bit 4	48	NC
24	Ground	49	Mouse Clock
25	System Data Bit 6	50	Keypad - Data/Power

* Active Low

Location of Pin Assignments for the MPEG and TV Video Adapter Connector

```
Table A-9. MPEG and TV Video Adapter Connector
==============================================================================
Pin     Signal
==============================================================================
  1     Expansion - SMI (Reserved)

  2     CRT - Red Video

  3     Battery 2 Voltage

  4     CRT- Blue Video

  5     CRT- Green Video

  6     CRT- Vertical SyNC

  7     CRT- Horizontal SyNC

  8     CRT ID Bit 3 / Clock
```

```
    9      Line In - Right Channel

   10      Ground

   11      VAFC - Overlay Window

   12      VAFC - SyNC Enable

   13      IDE Active *

   14      VAFC - Pixel Data 2

   15      VAFC - Pixel Data 6

   16      Ground

   17      VAFC - Pixel Data 10

   18      VAFC - Pixel Data 14

   19      TV - Composite SyNC

   20      Ground

   21      System Data Bit 0

   22      System Data Bit 2

   23      System Data Bit 4

   24      Ground

   25      System Data Bit 6
============================================================================
Pin      Signal
============================================================================
   26      System Data Bit 8

   27      System Data Bit 10

   28      Ground

   29      System Data Bit 12

   30      System Data Bit 14

   31      System Data Bit 16

   32      System Data Bit 20

   33      Ground

   34      16-Bit Memory Cycle *

   35      Low Memory Read Control *

   36      I/O Bus Ready *

   37      I/O Error Check *
```

```
   38      Ground

   39      OSC

   40      Ground

   41      Interrupt Request 5

   42      Interrupt Request 10

   43      Interrupt Request 15

   44      DMA Request 3

   45      DMA Acknowledge 0 *

   46      DMA Acknowledge 5 *

   47      DMA Acknowledge 7 *

   48      NC

   49      Mouse Clock

   50      Keypad - Data/Power
============================================================================
Pin     Signal
============================================================================
   51      NC

   52      Mouse Data

   53      NC

   54      NC

   55      NC

   56      DMA Acknowledge 1 *

   57      DMA Request 5

   58      DMA Request 0

   59      Interrupt Request 11

   60      Interrupt Request 6

   61      Interrupt Request 3

   62      Ground

   63      Bus Master Grab *

   64      No Wait State *

   65      DMA Terminate Count

   66      Low Memory Write Control *
```

```
67      Byte High Enable *

68      Ground

69      System Address Bit 21

70      System Address Bit 17

71      System Data Bit 15

72      System Data Bit 13

73      Ground

74      System Data Bit 11

75      System Data Bit 9
===============================================================================
Pin     Signal
===============================================================================
76      System Data Bit 7

77      Ground

78      System Data Bit 5

79      System Data Bit 3

80      System Data Bit 1

81      Ground

82      TV - NTSC/PAL ENCoding Select

83      VAFC - Pixel Data 15

84      VAFC - Pixel Data 11

85      Ground

86      VAFC - Pixel Data 7

87      VAFC - Pixel Data 6

88      Ground

89      VAFC - Dot Clock

90      VAFC - Blanking *

91      Ground

92      Line - Left Channel

93      Ground

94      Joystick Read Control *

95      Joystick Write Control *
```

```
 96     DC Voltage

 97     Expansion - Clock (Reserved)

 98     Battery 2 Voltage

 99     CRT ID Bit / Data

100     Battery 1 Voltage
=============================================================================
Pin     Signal
=============================================================================
101     Battery 1 Voltage

102     CRT ID Bit 0

103     Battery 2 Voltage

104     Expansion - Data (Reserved)

105     DC Voltage Input

106     MIDI In

107     MIDI Out

108     Ground

109     Line Out - Right Channel

110     Ground

111     VAFC - Video Clock

112     VAFC - Pixel Data 0

113     Ground

114     VAFC - Pixel Data 4

115     VAFC - Pixel Data 8

116     Ground

117     VAFC - Pixel Data 12

118     MPEG Audio - Clock

119     TV - On Control

120     Ground

121     System Address Bit 0

122     System Address Bit 2

123     System Address Bit 4

124     Ground
```

```
125     System Address Bit 6
===============================================================================
Pin     Signal
===============================================================================
126     System Address Bit 8

127     System Address Bit 10

128     Ground

129     System Address Bit 12

130     System Address Bit 14

131     System Address Bit 18

132     System Address Bit 22

133     Ground

134     Memory Read Control *

135     I/O Read Control *

136     Refresh *

137     Address Latch Enable

138     Reset Drive

139     Ground

140     Interrupt Request 4

141     Interrupt Request 7

142     Interrupt Request 12

143     DMA Request 1

144     DMA Request 6

145     DMA Acknowledge 2 *

146     NC

147     Expansion Network Enable *

148     Expansion I/O Power Down

149     Keyboard Clock

150     +5V System Output
===============================================================================
Pin     Signal
===============================================================================
151     +5V System Output

152     Keyboard Data
```

```
153     Expansion Device Ready

154     NC

155     DMA Acknowledge 6 *

156     DMA Acknowledge 3 *

157     DMA Request 7

158     DMA Request 2

159     Interrupt Request 14

160     Interrupt Request 9

161     Ground

162     System Clock

163     Ground

164     DMA Cycle Indicator

165     16-Bit I/O Cycle *

166     I/O Write Control *

167     Memory Write Control *

168     Ground

169     System Address Bit 23

170     System Address Bit 19

171     System Address Bit 15

172     System Address Bit 13

173     Ground

174     System Address Bit 11

175     System Address Bit 9
==============================================================================
Pin     Signal
==============================================================================
176     System Address Bit 7

177     Ground

178     System Address Bit 5

179     System Address Bit 3

180     System Address Bit 1

181     Ground
```

```
182     MPEG Audio - Data

183     MPEG Audio - R/L Channel Select

184     VAFC - Pixel Data 13

185     Ground

186     VAFC - Pixel Data 9

187     VAFC - Pixel Data 5

188     Ground

189     VAFC - Pixel Data 1

190     VAFC - Enable Video *

191     FDD Active *

192     Line Out - Left Channel

193     Ground

194     Secondary PCMCIA SMI

195     Secondary PCMCIA Speaker

196     DC Voltage Input

197     Secondary PCMCIA Ring-In

198     Power Switch

199     CRT ID Bit 2

200     Battery 1 Voltage
---------------------------------------------------------------------------
* Active Low
===========================================================================
```

```
50                                                    1
51                                                    100

150                                                   101
151                                                   200
```

Pin	Signal	Pin	Signal
1	Expansion - SMI (Reserved)	26	System Data Bit 8
2	CRT - Red Video	27	System Data Bit 10
3	Battery 2 Voltage	28	Ground
4	CRT - Blue Video	29	System Data Bit 12
5	CRT - Green Video	30	System Data Bit 14
6	CRT - Vertical SyNC	31	System Data Bit 16
7	CRT - Horizontal SyNC	32	System Data Bit 20
8	CRT ID Bit 3 / Clock	33	Ground
9	Line In - Right Channel	34	16-Bit Memory Cycle*
10	Ground	35	Low Memory Read Control*
11	VAFC - Overlay Window	36	I/O Bus Ready*
12	VAFC - SyNC Enable	37	I/O Error Check*
13	IDE Active *	38	Ground
14	VAFC - Pixel Data 2	39	OSC
15	VAFC - Pixel Data 6	40	Ground
16	Ground	41	Interrupt Request 5
17	VAFC -Pixel Data 10	42	Interrupt Request 10
18	VAFC - Pixel Data 14	43	Interrupt Request 15
19	TV - Composite SyNC	44	DMA Request 3
20	Ground	45	DMA Acknowledge 0*
21	System Data Bit 0	46	DMA Acknowledge 5*
22	System Data Bit 2	47	DMA Acknowledge 7*
23	System Data Bit 4	48	NC
24	Ground	49	Mouse Clock
25	System Data Bit 6	50	Keypad - Data/Power

* Active Low

Location of Pin Assignments for the External Options Connector

```
Table A-10. External Options Connector
==============================================================================
Pin     Signal
==============================================================================
   1     Expansion - SMI (Reserved)

   2     CRT - Red Video

   3     Battery 2 Voltage

   4     CRT - Blue Video

   5     CRT - Green Video

   6     CRT - Vertical SyNC

   7     CRT - Horizontal SyNC

   8     CRT ID Bit 3 / Clock
```

```
 9      Line In - Right Channel

10      Ground

11      VAFC - Overlay Window

12      VAFC - SyNC Enable

13      IDE Active*

14      VAFC - Pixel Data 2

15      VAFC - Pixel Data 6

16      Ground

17      VAFC - Pixel Data 10

18      VAFC - Pixel Data 14

19      TV - Composite SyNC

20      Ground

21      System Data Bit 0

22      System Data Bit 2

23      System Data Bit 4

24      Ground

25      System Data Bit 6
=============================================================================
Pin     Signal
=============================================================================
26      System Data Bit 8

27      System Data Bit 10

28      Ground

29      System Data Bit 12

30      System Data Bit 14

31      System Data Bit 16

32      System Data Bit 20

33      Ground

34      16-Bit Memory Cycle *

35      Low Memory Read Control *

36      I/O Bus Ready *

37      I/O Error Check *
```

```
   38      Ground

   39      OSC

   40      Ground

   41      Interrupt Request 5

   42      Interrupt Request 10

   43      Interrupt Request 15

   44      DMA Request 3

   45      DMA Acknowledge 0 *

   46      DMA Acknowledge 5 *

   47      DMA Acknowledge 7 *

   48      NC

   49      Mouse Clock

   50      Keypad - Data/Power
===========================================================================
Pin      Signal
===========================================================================
   51      NC

   52      Mouse Data

   53      NC

   54      NC

   55      NC

   56      DMA Acknowledge 1 *

   57      DMA Request 5

   58      DMA Request 0

   59      Interrupt Request 11

   60      Interrupt Request 6

   61      Interrupt Request 3

   62      Ground

   63      Bus Master Grab *

   64      No Wait State *

   65      DMA Terminate Count

   66      Low Memory Write Control *
```

```
  67      Byte High Enable *

  68      Ground

  69      System Address Bit 21

  70      System Address Bit 17

  71      System Data Bit 15

  72      System Data Bit 13

  73      Ground

  74      System Data Bit 11

  75      System Data Bit 9
=============================================================================
Pin     Signal
=============================================================================
  76      System Data Bit 7

  77      Ground

  78      System Data Bit 5

  79      System Data Bit 3

  80      System Data Bit 1

  81      Ground

  82      TV - NTSC/PAL ENCoding Select

  83      VAFC - Pixel Data 15

  84      VAFC - Pixel Data 11

  85      Ground

  86      VAFC - Pixel Data 7

  87      VAFC - Pixel Data 6

  88      Ground

  89      VAFC - Dot Clock

  90      VAFC - Blanking *

  91      Ground

  92      Line - Left Channel

  93      Ground

  94      Joystick Read Control *

  95      Joystick Write Control *
```

```
 96      DC Voltage

 97      Expansion - Clock (Reserved)

 98      Battery 2 Voltage

 99      CRT ID Bit / Data

100      Battery 1 Voltage
===========================================================================
Pin      Signal
===========================================================================
101      Battery 1 Voltage

102      CRT ID Bit 0

103      Battery 2 Voltage

104      Expansion - Data (Reserved)

105      DC Voltage Input

106      MIDI In

107      MIDI Out

108      Ground

109      Line Out - Right Channel

110      Ground

111      VAFC - Video Clock

112      VAFC - Pixel Data 0

113      Ground

114      VAFC - Pixel Data 4

115      VAFC - Pixel Data 8

116      Ground

117      VAFC - Pixel Data 12

118      MPEG Audio - Clock

119      TV - On Control

120      Ground

121      System Address Bit 0

122      System Address Bit 2

123      System Address Bit 4

124      Ground
```

```
125     System Address Bit 6
==============================================================================
Pin     Signal
==============================================================================
126     System Address Bit 8

127     System Address Bit 10

128     Ground

129     System Address Bit 12

130     System Address Bit 14

131     System Address Bit 18

132     System Address Bit 22

133     Ground

134     Memory Read Control *

135     I/O Read Control *

136     Refresh *

137     Address Latch Enable

138     Reset Drive

139     Ground

140     Interrupt Request 4

141     Interrupt Request 7

142     Interrupt Request 12

143     DMA Request 1

144     DMA Request 6

145     DMA Acknowledge 2 *

146     NC

147     Expansion Network Enable *

148     Expansion I/O Power Down

149     Keyboard Clock

150     +5V System Output
==============================================================================
Pin     Signal
==============================================================================
151     +5V System Output

152     Keyboard Data
```

```
153     Expansion Device Ready

154     NC

155     DMA Acknowledge 6 *

156     DMA Acknowledge 3 *

157     DMA Request 7

158     DMA Request 2

159     Interrupt Request 14

160     Interrupt Request 9

161     Ground

162     System Clock

163     Ground

164     DMA Cycle Indicator

165     16-Bit I/O Cycle *

166     I/O Write Control *

167     Memory Write Control *

168     Ground

169     System Address Bit 23

170     System Address Bit 19

171     System Address Bit 15

172     System Address Bit 13

173     Ground

174     System Address Bit 11

175     System Address Bit 9
=============================================================================
Pin     Signal
=============================================================================
176     System Address Bit 7

177     Ground

178     System Address Bit 5

179     System Address Bit 3

180     System Address Bit 1

181     Ground
```

```
182     MPEG Audio - Data

183     MPEG Audio - R/L Channel Select

184     VAFC - Pixel Data 13

185     Ground

186     VAFC - Pixel Data 9

187     VAFC - Pixel Data 5

188     Ground

189     VAFC - Pixel Data 1

190     VAFC - Enable Video *

191     FDD Active *

192     Line Out - Left Channel

193     Ground

194     Secondary PCMCIA SMI

195     Secondary PCMCIA Speaker

196     DC Voltage Input

197     Secondary PCMCIA Ring-In

198     Power Switch

199     CRT ID Bit 2

200     Battery 1 Voltage
-----------------------------------------------------------------------------
* Active Low
=============================================================================
```

Appendix B. Power Cord Set Requirements

B.1 3-Conductor Power Cord Set

The wide range input feature of your computer permits it to operate from
any line voltage from 90 to 264 volts AC.

The power cord set received with the computer meets the requirements for
use in the country where you purchased the equipment.

Power cord sets for use in other countries must meet the requirements of
the country where you use the computer. For more information on power cord
set requirements, contact your Compaq authorized reseller or service
provider.

General Requirements

The requirements listed below are applicable to all countries:

1. The length of the power cord set must be at least 6.00 feet (1.8 m)
   and a maximum of 9.75 feet (3.0 m).

2. All power cord sets must be approved by an acceptable accredited agency
   responsible for evaluation in the country where the power cord set will
   be used.

3. The power cord set must have a minimum current capacity of 10A and a
   nominal voltage rating of 125 or 250 volts AC, as required by each
   country's power system.

4. The appliance coupler must meet the mechanical configuration of an EN
   60 320/IEC 320 Standard Sheet C13 connector, for mating with appliance
   inlet on the Switch Box.

Country-Specific Requirements

3-Conductor Power Cord Set Requirements - By Country

Country	Accredited Agency	Applicable Note Numbers
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	SETI	1
France	UTE	1

```
Germany            VDE                         1

Italy              IMQ                         1

Japan              JIS                         3

Norway             NEMKO                       1

Sweden             SEMKO                       1

Switzerland        SEV                         1

United Kingdom     BSI                         1

United States      UL                          2
-------------------------------------------------------------------------
NOTES 1: The flexible cord must be <HAR> Type HO5VV-F, 3-conductor, 1.0
         mm2 conductor size. Power cord set fittings (appliance coupler
         and wall plug) must bear the certification mark of the agency
         responsible for evaluation in the country where it will be used.

      2: The flexible cord must be Type SJT or equivalent, No. 18 AWG,
         3-conductor. The wall plug must be a two-pole grounding type with
         a NEMA 5-15P (15A, 125V) or NEMA 6-15P (15A 250V) configuration.

      3: The appliance coupler, flexible cord, and wall plug must bear a
         "T" mark and registration number in accordance with the Japanese
         Dentori Law. The flexible cord must be Type VCT or VCTF,
         3-conductor, 0.75mm2 conductor size. The wall plug must be a
         two-pole grounding type with a Japanese Industrial Standard C8303
         (15A, 125V) configuration.
=========================================================================
```

Appendix B.2 2-Conductor Power Cord Set

```
The wide-range input feature of your computer permits it to operate from
any line voltage between 100 to 240 volts AC.

The power plug or power cord set (appliance coupler, flexible cord, and
wall plug) you received with your computer meets the requirements for use
in the country where you purchased your computer.

Power cord sets for use in other countries must meet the requirements of
the country where you use the computer. For more information on power cord
set requirements, contact your Compaq authorized dealer.

General Requirements

The requirements listed below are applicable to all countries:


1. The length of the power cord set must be at least 6.00 feet (1.8 m)
   and a maximum of 9.75 feet (3.0 m).

2. All power cord sets must be approved by an acceptable accredited agency
   responsible for evaluation in the country where the power cord set will
   be used.
```

3. The power cord set must have a minimum current capacity of 2.5A and a
   nominal voltage rating of 125 or 250 volts AC, as required by each
   country's power system.

4. The appliance coupler must meet the mechanical configuration of an EN
   60 320/IEC 320 Standard Sheet C7 connector, for mating with appliance
   inlet on the AC Adapter.

Country-Specific Requirements


```
2-Conductor Power Cord Set Requirements - By Country
==============================================================================
Country             Accredited Agency           Applicable Note Numbers
==============================================================================
Australia           EANSW                       1

Austria             OVE                         1

Belgium             CEBC                        1

Canada              CSA                         2

Denmark             DEMKO                       1

Finland             FIMKO                       1

France              UTE                         1

Germany             VDE                         1

Italy               IMQ                         1

Japan               JIS                         3

The Netherlands     KEMA                        1

Norway              NEMKO                       1

Sweden              SEMKO                       1

Switzerland         SEV                         1

United Kingdom      BSI                         1

United States       UL                          2
------------------------------------------------------------------------
NOTES 1: Flexible cord must be <HAR> Type HO3VV-F, 2-conductor, 0.75 mm2
         conductor size. Power cord set fittings (appliance coupler and
         wall plug) must bear the certification mark of the agency
         responsible for evaluation in the country where it will be used.

      2: Flexible cord must be Type SPT-2 or equivalent, No. 18 AWG,
         2-conductor. Wall plug must be a two-pole type with a NEMA 1-15P
         (15A, 125V) configuration.
==============================================================================
```

Appendix C. Using Additional Hard Drives

The Compaq LTE 5000 Family of Personal Computers can support up to four
hard drives: two in the computer and two in the MultiBay Expansion Base or
MultiBay ISA Expansion Base. A variety of optional Compaq LTE 5000 hard
drives is available. Some Compaq LTE Elite hard drives are also compatible
as data storage drives.

The LTE 5000 hard drive that is preinstalled in the dedicated hard drive
bay contains the software necessary to access resources such as PC Cards,
IrDA, multimedia, and others. Those resources will not be available if you
start (boot) the computer from a drive other than the preinstalled hard
drive (or a specially prepared hard drive).

IMPORTANT: The preinstalled software on the LTE Elite hard drive does not
           match the LTE 5000 hardware, and the preinstalled software on
           the LTE 5000 hard drive does not match the LTE Elite hardware.
           Starting the computer from a drive other than the original
           preinstalled hard drive, which contains the appropriate
           software, can produce unpredictable results. Drives shipped
           from Compaq with the LTE 5000 preloaded software have the
           product name (LTE 5000) on the label.

Appendix C.1 Using Optional LTE 5000 Hard Drives

Insert an optional LTE 5000 hard drive into a MultiBay hard drive carrier
and then load it into one of the MultiBays in the computer or expansion
base. Boot the computer from the preinstalled LTE 5000 hard drive in the
dedicated hard drive bay.

NOTE: If you want to create an additional bootable hard drive, you must
      partition and format the drive as a bootable drive. You must also
      copy to the drive the LTE 5000 software that is necessary to operate
      the computer and access the computer features.

Appendix C.2 Using LTE Elite Hard Drives for Data Storage

Early model LTE Elite hard drives cannot be used as secondary drives.
However, later model LTE Elite hard drives do have secondary-drive
capability. If you have an LTE Elite hard drive with secondary-drive
capability, you can use it in one of the MultiBays in the LTE 5000 or the
MultiBay Expansion Base to store data or to transfer data files.

An LTE Elite hard drive that has secondary-drive capability is identified
by the following symbol on the label located on the top of the drive:

The following limitations apply when using an early model LTE Elite hard
drive (one that does not have the secondary-drive capability symbol):

o When used in either expansion base, the LTE Elite hard drive must be the
  only device in the expansion base.

o When used in the computer, the LTE Elite hard drive can be inserted only in the dedicated bay.

Using an LTE Elite Hard Drive That Has Secondary-Drive Capability

If an LTE Elite hard drive has the secondary-drive capability symbol, you can insert it into one of the MultiBays, but you must still boot from the LTE 5000 hard drive. Place the LTE Elite hard drive into a MultiBay hard drive carrier (sold separately) before inserting it into a MultiBay. Use the secondary-drive capable LTE Elite hard drive as you would any second hard drive.

Using an LTE Elite Hard Drives That Does Not Have Secondary-Drive Capability

Early model LTE Elite hard drives that do not have the secondary-drive capability symbol must be used in the primary drive bay in the computer or the expansion base.

Before beginning one of the procedures described below to insert the drive, run Computer Setup and ensure that the hard drive boot sequence on the Initialization menu is set to the factory default of:

1. Hard drive in the computer

2. Hard drive in the computer MultiBay

3. Hard drive in the expansion base MultiBay I

4. Hard drive in the expansion base MultiBay II

See Chapter 2 for more information about running Computer Setup.

Follow these steps to insert an LTE Elite hard drive that does not have secondary-drive capability into the expansion base MultiBay I:

1. Save your work and shut down the computer.

2. Place the LTE Elite hard drive into the MultiBay hard drive carrier (sold separately).

3. Insert the MultiBay hard drive carrier into the expansion base MultiBay I (the MultiBay on the left side of the Expansion Base).

   NOTE: If you have another hard drive in MultiBay II, that hard drive must have secondary-drive capability.

4. Turn on the computer.

Use the LTE Elite hard drive as you would use any second hard drive.

If you do not have an expansion base, you can insert an LTE Elite hard drive that does not have secondary-drive capability into the dedicated hard drive bay. Use this procedure to transfer files only; it is not recommended for everyday use.

IMPORTANT: The computer does not automatically load Microsoft Windows 95
                 when this procedure is used. Follow this procedure only if you
                 are experienced at using MS-DOS mode commands.

Follow these steps to insert an LTE Elite hard drive that does not have
secondary-drive capability into the dedicated hard drive bay:

1. Save your work and shut down the computer.

2. Remove the LTE 5000 hard drive from the dedicated hard drive bay.

3. Place the LTE 5000 hard drive into the MultiBay Hard Drive Carrier
   (sold separately) and insert the carrier into the computer MultiBay.

     NOTE: You can insert a hard drive other than the original LTE 5000 hard
           drive; however, the drive must have secondary-drive capability.
           To use a CD-ROM drive in the computer MultiBay, you must install
           the CD-ROM drivers.

4. Insert the LTE Elite hard drive into the dedicated hard drive bay.

5. Step 5 depends on the operating system on the LTE Elite hard drive.

     o If the drive has Windows 95, turn on the computer and press F8 when
       you see the message "starting Windows 95." When the Windows 95
       Startup Menu appears, select "Command Prompt Only."

     o If the drive has Windows 3.1, turn on the computer and press F5 when
       you see the message "starting MS-DOS." This bypasses the
       configuration files (AUTOEXEC.BAT and CONFIG.SYS).

6. Use the COPY command to transfer files.

NOTE: Some LTE 5000 features will not be available until you reinsert the
      LTE 5000 hard drive in the dedicated hard drive bay and restart the
      computer.

Appendix C.3 Hard Drive Compatibility

Table C-1. Hard Drive Differences

Feature	Comparison
Secondary drive capability	LTE Elite drives are jumpered internally to be "Device 0" (master) drives. They cannot function as "Device 1" (slave) drives
	The LTE 5000 Personal Computer supports multiple drives and LTE 5000 drives are jumpered as "cable select." The drive looks at a pin on the cable to determine whether it is "Device 0" or "Device 1." They can function as primary or secondary drives.

The systems can boot only from "Device 0"
                              drives.

                              Drives with secondary drive capability
                              (cable select) have the following icon on
                              the label:

ILLUSTRATION OF (to be supplied)

Preloaded software and   LTE Elite and LTE 5000 Personal Computers
drivers   use different chip sets in areas such as PC
                           Cards and video/graphics. Different hardware
                           chip sets require different software
                           drivers.

                           The LTE 5000 Personal Computer has many
                           features not supported on the LTE Elite,
                           such as Multimedia and infrared. LTE Elite
                           drivers do not have supporting software.

Diagnostics and Setup   The LTE Elite Personal Computer has
                           Diagnostics and Setup on a hidden partition
                           on the hard drive.

                           The LTE 5000 has Setup in ROM. Diagnostics
                           are on diskette.
===

Table C-2. Compatibility Implications
===
Feature   Description
===
Option drives   Option Drives shipped after the introduction of
                           the LTE 5000 are common to the LTE Elite and the
                           LTE 5000 Personal Computers.

                           o They will have Secondary Drive Capability
                             (cable select). These drives will function
                             properly as "Device 0" ("Master") in the LTE
                             Elite.

                           o They will not have preloaded software for
                             either system (except Diagnostics and Setup).
                             (LTE Elite option drives never have contained
                             preloaded software).

                           o They will have the hidden Diagnostics and Setup
                             partition for the LTE Elite (as LTE Elite
                             Option drives have always had). The LTE 5000
                             does not use this partition.

                           Option drives shipped before the LTE 5000
                           Announcement are for the LTE Elite only. They do
                           not have Secondary Drive Capability. Drives
                           shipped with LTE 5000 preloaded software have the
                           product name (LTE 5000) on the label.

Using LTE 5000   Drives with Secondary Drive Capability (cable
drives in the LTE   select) will function properly as "Device 0" in
Elite   the LTE Elite from a hardware standpoint.

However, drives with LTE 5000 preloaded software
have the wrong drivers, and expect to find
features not present in the LTE Elite hardware,
resulting in errors.

LTE 5000 drives have a utility to detect the
hardware/software mismatch and issue a caution.

Drives shipped in LTE 5000 units do not have
Setup or Diagnostics in a hidden partition for
the LTE Elite.

There is little practical use for LTE 5000 drives
in the LTE Elite. One exception is to use the
MS-DOS "Copy" command to transfer files to and
from a drive in a SmartStation.

o If the drive has Windows 3.1, you can boot
  MS-DOS only by pressing F5 at the "Loading
  MS-DOS" message to skip AUTOEXEC.BAT and
  CONFIG.SYS.

o If the drive has Windows 95 loaded, turn on the
  computer and press F8 when you see the message
  "starting Windows 95." When the Windows 95
  Startup Menu appears, select "Command Prompt
  Only."

Using LTE Elite drives in the LTE 5000	LTE Elite drives can be used in MultiBay I of the LTE 5000 MultiBay Expansion Base.

o MultiBay I is normally configured as "Device 0"
  on the Secondary IDE Interface, so the LTE
  Elite drive can be "Device 0" without being the
  boot drive.

o Boot from the LTE 5000 drive in the dedicated
  hard drive compartment of the computer.

o If running Windows 3.1, an LTE Elite drive in
  the LTE 5000 cannot copy files from a CD-ROM.

o If running Windows 95, an LTE Elite drive in
  the LTE 5000 can copy files from a CD-ROM.

Limited use without an expansion base	The LTE Elite drive must be "Device 0," so it must be the boot drive. The LTE 5000 Drive can be used as a secondary drive.

Preloaded software is incompatible, so you must
follow the appropriate procedure for either
Windows 3.1 or Windows 95, whichever is loaded on
the drive.

o If the drive has Windows 3.1 loaded, use F5 to
  abort AUTOEXEC.BAT and CONFIG.SYS. Press F5
  when the message "Loading MS-DOS" appears.

o If the drive has Windows 95 loaded, turn on the

computer and press F8 when you see the message
"starting Windows 95." When the Windows 95
Startup Menu appears, select "Command Prompt
Only."

This leaves you at the MS-DOS prompt; use the
"Copy" command to transfer files.

NOTE: Drives shipped with LTE 5000 preloaded
      software have the product name (LTE 5000)
      on the label.

Not recommended for day to day use; use for
occasional file transfers only. MS-DOS
proficiency is required.
===